The Scientific Articulation of the Human Teeth as Founded on Geometrical, Mathematical and Mechanical Laws.

The Anatomical Articulator.

By W. G. A. Bonwill, D.D.S., Philadelphia, Pa.

(Continued from page 636.)

Never allow any of the glazing to remain on any teeth where antagonizing; not even the incisors, as not a surface is adapted for incising or grinding. They will soon polish from the close contact. Only carborundum wheels should be used! What size? For quick work a wheel one and a half inches in diameter and never more than an eighth of an inch thick. Have some a full sixteenth. They will all keep oval on the surface. An old carborundum wheel will shape it when irregular and out of true. For making the finer parts of groove between the cusps after using the largest wheel, take a three-quarter inch. Often when the teeth are in position on wax and need only a touch, it can be done with a quarter or half-inch wheel in the dental engine without removing tooth from the wax. If any care is used in grooving the teeth before any are put on the wax bite, very little will have to be cut after trial on the wax.

To be doubly exact the articulating paper can be used both while setting the teeth out of the mouth and afterwards in the mouth which latter is necessitated by teeth changing in vulcanizing or soldering.

Don't forget we are talking all the time of *a normal set* of teeth—a perfect type that neither God nor man can improve. This you can make.

Once get the true normal perfect type of jaws in your eye and you will see the deviation everywhere. To model the wax is the work of the artist dentist. Mere mechanism alone will not help you. While I show you by Fig. 3 the exact size of the arch of the lower incisors, yet I never regard this in the wax modeling. If every jaw we meet were perfect, then we could lay it out with a pair of dividers on paper, but each mouth must be treated differently, yet the law can be followed in the sizes of teeth and their arrangement, no matter how abnormal and deformed. Let me warn you now if your wax is too long, the teeth will clatter. Too short, and there will be an eternal tiring of the muscles and they cannot act to bring the jaws together with force to crush the food. It is not necessary to curve the wax at the ramus on the trial bite, as you cannot cut the cusps out in the wax. Hence, plain and flat on the articulating surfaces. But, in modeling the upper wax see that it is not so long at the molar region as to touch the lower alveolar border and leave no length to the lower teeth. If too long, then you can have no curvature upwards to the ramus, and the molar teeth would show too much in laughing and have too much leverage. I Have the wax of the upper plate to be outside the alveolar border of the lower and running back in an almost straight line towards the condyles; yet the second molars may be drawn in towards the tongue slightly and no detriment to the case. In full sets I have a temporary base wire for both jaws, around which the wax is modeled, to which spiral springs are attached, by which, when fitting the lower wax base plate they are held in position as the spiral spring acts for permanent teeth. This insures that the temporary plates keep upon the border and in place. Be sure that the wax touches more in the molar locality than in front to insure that there is no mistake in the base-plate touching the gums firmly. This spiral spring need only be used in modeling the lower to keep it in position. The upper generally has suction enough to remain in place while modeling the wax. To insure ease of manipulation, when not using metal, I prefer paraffine wax for base-plate or pink gutta percha, which is firmer and better. Keep the wax cold that you may depend on its firmness to keep shape and position; and further, place a one sixteenth of an inch steel wire across the palate of upper base plate, and a circular wire in the wax of the lower, to both of which I attach the spiral springs on either side to hold lower plate in place. These wires of steel make everything firm and reliable.

When the wax is contoured to shape and symmetry and to suit the artist's eye, then, when placed in the articulator, its movements will do all for you in the mechanical; and as you bring the largest number of teeth into articulation, so will it be in the mouth for which it was intended. You must see now that what I am after is to show that there are laws of

governing, not only the jaws, but the whole articulate bony frame work and all down through animal life, wherever a bone is a component part, and such laws we can utilize as mechanics, artists and physicists, by which we can exactly reproduce the arch type in every case of man or animal. In some mouths the lower teeth that are remaining will call for the upper to fall inside the lower arch and also in some full sets. But mostly the

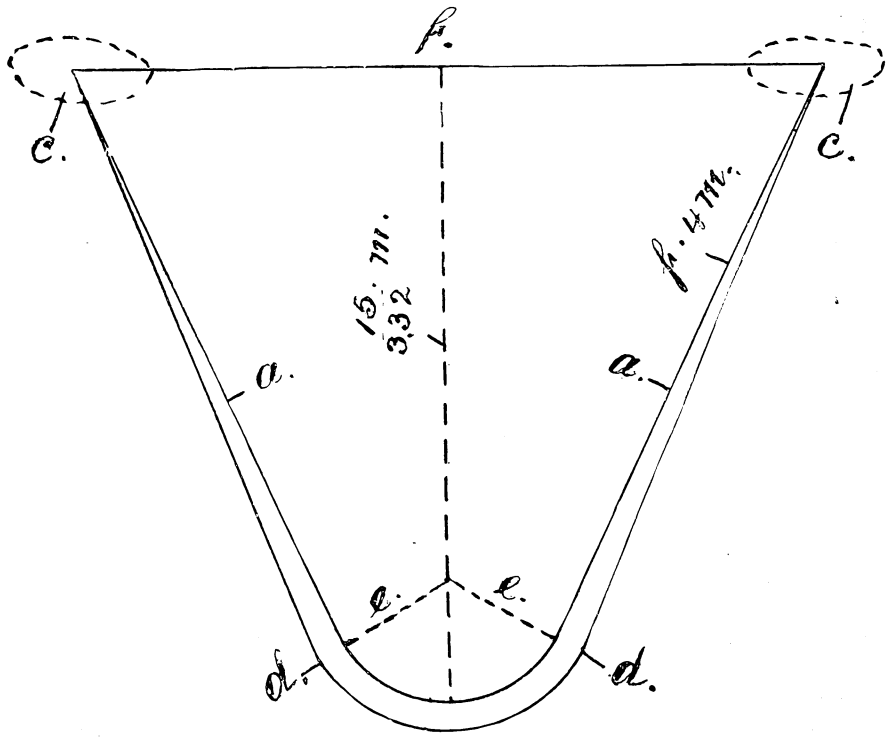


FIG. 9.

latter cases you can control and make an overbite with the upper, but not much; and in such you will generally have to reverse the grooving of the teeth and cut the upper as you would the lower in a normal set. This is indicated where there is a very small upper and large arch to the lower. But no matter what the case may be, you have the absolutely normal jaws and its mechanism before you, and with the instrument of precision in your hands you can model any case in it.

That no mistake may be made in setting the plaster models with the

wax articulation on them in the articulator, do not forget that the large bow of the instrument is the one to which to fasten the lower plaster model. I have seen it used reversely, which would not work at all.

Fig. 9. The inner line, a, a, and curve e to e, marks the position of a normal lower arch and jaw. The outer D gives the relation, the upper bears to it, with the lines converging at C, the center of the outlined condyles. While the lines on the inner circle measure four (4) inches, the line from F to the center of the lower arch only three inches and fifteen thirty seconds (3.15/32). A.A. is the distal surface of second molar, lower. The lower jaw in its mandibular movements will always have a greater distance to go at the arch of incisors when all the teeth on the side of the movement will be in contact and touch everywhere on their surfaces as in Fig. 7, while on the opposite side the lower jaw leaves the outer line D, and the teeth on that side will touch as in Fig. 6 from the first bicuspid, at its palatal cusp through to the second molar to balance the force of the muscles upon that side, whereby the lower jaw is always touching at three points. Fig. 7 is the extreme limit of range of the lower jaw, and where the buccal cusps of the upper all come in contact with the buccal lower cusps. The extremest divergence to the right or left is not over an eighth of an inch at the arch, growing less to the condyles C, C, and the curve upwards at the ramus will be one-eighth of an inch out of a straight line as in Figs. 1, 6, 7, 8. The lower jaw can be thrown outside of the arch of the upper.

Fig. 8 is a three-quarter size natural jaw of great perfection, and it beautifully delineates the curve, and the depth of the under bite. This curve at the ramus conforms to a radius of three and fifteen thirty seconds of an inch (3.15/32) starting from the median line and ending at the second molar. This shows the law, yet it is not necessary and molars in the lower jaw are nearly in a straight line from the buccal surface of the cuspid to the condyle at its center.

The wisdom teeth deviate in and out from the imaginary line drawn in this figure. The equilateral triangle is clearly shown measuring from the median line cutting edge of lower incisors to the center of the second molars on the distal surfaces. Do not forget what I have already told you, the significant problem that the two bicuspids and two molars on either side in the lower jaw in a normal mouth measure the same in their greatest diameter as the four incisors and two cuspids when in a line at their greatest diameters, and the three lines form an equilateral triangle. It is to the credit of this law that seldom is there a deviation from the diameters through the distal surfaces (mean diameter) and each tooth if ever so irregular in the arch yet will come up to the law of absolute angles and curves on their articulating faces. Any change is abnormal

and shows a degradation from the original typal shapes, as I have shown alone throughout the whole mechanism of the jaws.

The dividers or compasses must be used to get the casts right; use the dividers for each or any case. The lower teeth touch between

FIG. 10. FIG. 11.

the cusps of the upper to the dotted line shown. Fig. 7 is full size of Fig. 8. Fig. 2 explains well the depth of grooves and where the first molar should rise at the distal cusp to the top line. Figs. 3 and 4 explain the O. G. grooves but not the special shapes of the bicuspids. Fig. 10 is an occlusal surface of a first bicuspid upper. If the groove to form the cusps on it ran in parallel lines, the lower bicuspid would have to be

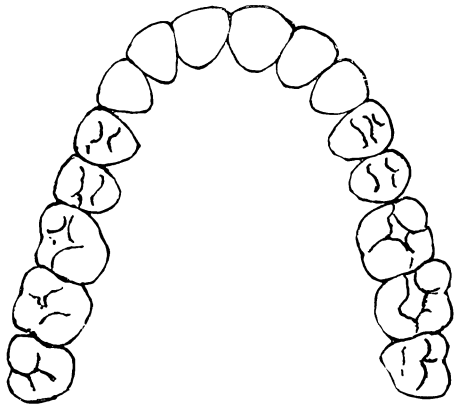


FIG 12.

flat on its buccal surface or wall, and the upper cusp would be weakened. But to meet the oval face—buccal—of the lower bicuspids, the groove must take the form of Fig. 10 and to allow the cusp of the lower to touch all possible surface on the upper it must be shaped as in Fig. 11 at O, which is a half section of an upper bicuspid. This is plain and simple, yet it must be done to reach the forms whereby the highest efficiency is attained. As I said, all this shaping can be approximately done before any tooth is placed on the wax in the articulator.

Fig. 5 has been fully described, yet it must have special study given it to realize the magnitude of the whole of this machinery. It is well to

explain that an O. G. is the half of the figure 8. It is a term used in mouldings and is well applied here. In the grooves of the molars where it is shown, it is not a full O. G., it is flatter. Figs. 12, 13 are copied from as nearly perfect a full set of natural teeth at the age of 25 as I ever saw. Fig. 13 shows how to place the wax bite and casts. If you ever reflect, that what you are now doing, is the work of an all wise intelligence and your human intelligence and you can grasp the laws as shown. Do not think of it as my ingenuity, but that you can fathom every detail. Don't forget when you put in the bows to press fully up to their limit and be sure you fix them with screws S. S.

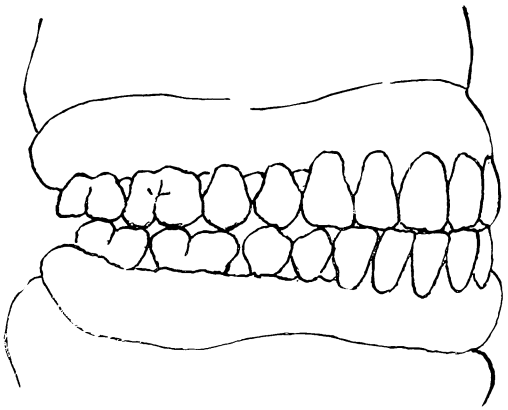


FIG 13.

Fig. 14 supposes the upper and lower incisors to come in direct contact, which you must admit is not normal, as it brings only the cusps in direct contact with each other and gives no surfaces for mastication. In all such cases the line of occlusion or contact must be absolutely a straight line or plane, or there would be constant interruption from one or all of the teeth when in action. There is no stronger illustration of, what everyone will admit, the position I take—Nature, nor evolution made the design; this arrangement is the only one to allow of greatest usefulness and efficiency, and not least of all beauty of arrangement. Never alter the bows to get a different bite! This cannot correct a mistake you have made in getting your wax model in the mouth. Go back again to the mouth and do it over again from the very start until you learn how to be exact as these wonderful laws dictate at every step you take to get such results. Don't forget—I repeat it often—to always try the case in the mouth before you dare to complete it in your laboratory! No matter how absolute and perfect the laws may be, yet you are human

and may not be a first-class mechanic or artist and no one can see a case on the models and have them artistically correct! Try them in. There are so many "slips" before your case is in the mouth, that it is well to carve out your wax around the teeth before you try in the mouth—for wax when reheated will change the position of a tooth. An important thing to

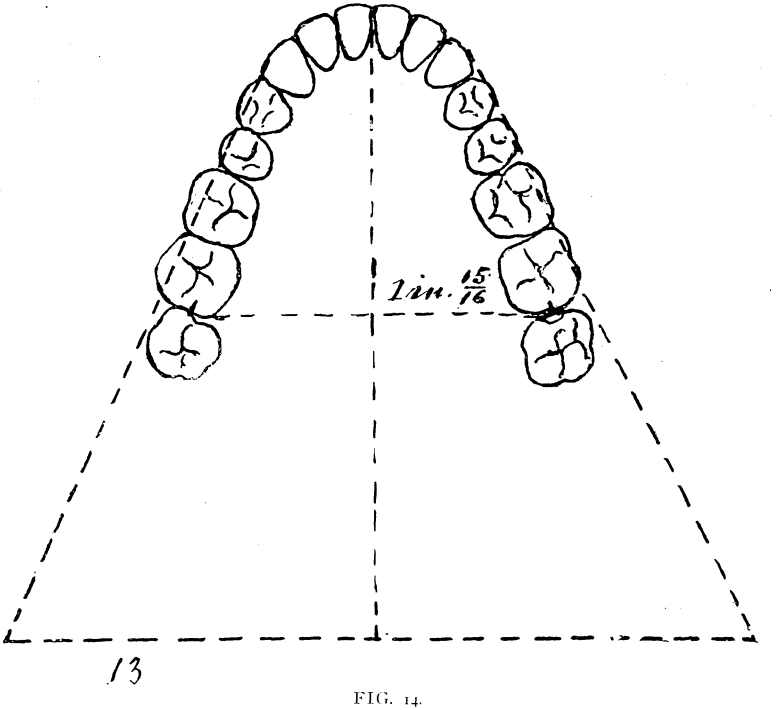


FIG. 14.

ever bear in mind, while you are placing your cases in plaster in the flask, always put in bolts and screw the flasks up before plaster gets hard. This is seldom done and teeth are forced out of place thereby.

Details—please do not forget! If the case does not come out just right, you can easily place wax not too soft on the articulating surfaces and take the bite and put this again in the articulator.

It is worthy of note, just here* that the first essay on articulation was submitted to Dr. J. H. McQuillan, then editor of *Cosmos*. It was read

*The lines which follow had appeared in the introductory and was returned to the author with the suggestion that they be eliminated. But they come back indorsed, "Ottolengui, please let this go in." The closing paragraph is sad reading, when the author is no more. Yet it is symbolical of this unique man that his last professional writing should by chance close with an invitation to others to come and learn of him.—Editor.

before the Delaware Dental Society. It was refused publication, no reason being assigned. Later it was presented through Dr. J. H. McQuillan at the American Dental Association at Niagara to the profession, accompanied by a short article, explanatory, and a model. The second essay was read June 6, 1885, and given to the *Dental Cosmos* soon after, and Dr. James W. White, then editor, refused to publish the article, unless he were allowed to cut two-thirds out after his own idea of editorial scissors, to which I most indignantly replied he was not capable of doing so from any standpoint as editor, M.D., or D.D.S. Later on, Dr. E. C. Kirk, its present editor, asked me to let Mr. Hise rewrite the article, and after a private interview of three hours, which I gave him, not a word did they say save that I was not able to show up clearly my own discovery after forty years with it. It was, however, published by Johnson & Lund in the Dental Office and Laboratory in 1886, but it failed to reach the spot. The American System of Dentistry has a copy of the 1885 article, but Dr. Litch refused it, but the publishers demanded he should place it in that work.

The editor of the ITEMS OF INTEREST now, at this late day, seeing that justice had not been done me nor the article, publishes it with many illustrations and a description of its uses which the author trusts will be accepted.

Let me repeat what I have already said in this article and so often in personal interviews and lectures, that the majority of dentists can never grasp it unaided by my personal instruction in the laboratory, where I may have each and all do the work in my presence and with my models before them

Some Thoughts on Orthodontia.

By H. Herbert Johnson, D.D.S., Macon, Ga.

The recorded evidence seems to justify the opinion that irregularity in teeth is much more prevalent than it was when civilized society had not been developed to its present state of existence.

Those who have been interested enough to pursue a line of investigation, seem to have been forced to this conclusion.

J. L. Levison, in a work entitled, "The Jaws and Teeth of Semi-barbarous People," says; "The jaws of civilized men are more contracted than those of semi-barbarous races, and this is the result of direct violation of the Creator's laws, who willed that the brain and nervous system of the growing child should not be overtaxed, and that the dental process of attempting to build up the organic instruments, and cultivate the mental faculties at the same time, is almost impossible to accomplish."

Some time in 1860, Mr. Nichols and Mr. Mummery made extensive observations on the teeth of savage races. Out of the thousands of Chinese and Indian skulls which they examined, they found irregularity very rare and in nearly all cases there was a high development of the maxillary bones.

In the crypt of the Hythe Church in Kent, Messrs. Coleman and Cartright made extensive examinations in this direction. These were very old specimens and in nearly every case they found the jaws well developed and the teeth remarkably regular. Subsequently in an able paper before the Odontological Society of Great Britain, Mr. Cartright wrote, "That irregularities result from irregular breeding; that they are both congenital and hereditary; that there is very little increase in the anterior part of the jaw after eight or ten years; that if the temporary teeth were to remain, the jaws would not change from that of childhood; that in all cases of irregularity the maxillæ are more or less altered in proportion of development, whilst the teeth maintain, in regard to their size, an average development."*

*These quotations were taken from Dr. Talbot's work on irregularity.

Dr. Mitchell, in the June, 1899, *Cosmos* says; "Just in proportion to the mental ascendancy of a patient, just in proportion he had found a contraction of the jaws and smallness of the arch."

Mr. Hepburn, who wrote a treatise in 1870, and other writers might be quoted whose opinions are in accord with the foregoing expressions of these various writers.

Civilization Not the Only Factor in Irregularities.

While concurring in these opinions as far as according to civilization the onus of being *one* of the important factors in dental irregularity, I am not willing to admit that it is more important than other causes. While it may be the direct result of our civilization as it exists in this age, I feel constrained to believe that most of it is purely hereditary, and comes largely from incompatible marriages, brought about by miscegenation. The mixture of the races is a very important cause of physical degeneracy, or improvement, according to the nature of the union. The law of inheritance is one of the wonders of nature and it is through this medium we are able to trace the physical characteristics of race through generations. Take the Egyptians and Jews, who have mixed less with other nations and their racial characteristics have remained almost unchanged through ages.

Here in this country we have no purity of race, but a general admixture of all nations. The effects of miscegenation is nowhere more quickly discernible than in the teeth and jaws, hence the importance of its consideration in this paper. A child who inherits a very narrow and contracted jaw from some of its ancestry and very broad teeth from another necessarily inherits a case of irregularity along with the other; and these are the cases which require such careful thought and scientific attainment to manage successfully. This class of irregularity usually manifests itself at a very early age.

At the time when the deciduous central incisors are removed to make room for the permanent centrals, it soon becomes apparent that these do not give the required amount of space and the laterals must also be extracted, although a little prematurely. The permanent centrals then come in, taking up almost the entire space left by extracting the deciduous centrals and laterals. The permanent laterals soon follow and there being no place in the line for them, they are soon found emerging on the lingual side of the arch, if it is the inferior maxilla and generally on the labial side if it is the superior maxilla, coming just inside the permanent centrals and temporary cuspids. A problem confronts us. The incoming teeth must have room and there seems nothing left to do but extract the temporary cuspid, whose roots scarcely show any sign of absorption, it not being due to be shed for five years. The permanent lateral now hav-

ing room made for it comes in and takes the place of the temporary cuspid. In the mean time while all this was going on at the labial end of the arch, changes have been taking place at the posterior end. The first permanent molars have been erupted and have taken their places behind the temporary molars. There is now no further need of immediate attention and all goes along smoothly until the permanent bicuspids are in place, the temporary molars whose places they filled having left them plenty of room. The arch is now filled comfortably with permanent teeth and the cuspids have not yet put in an appearance; in fact there is no place for them and yet we know they must come. In a few weeks the canine ridge is observed to begin to swell and the presence of the key stone of the arch commences to make itself manifest. There is now

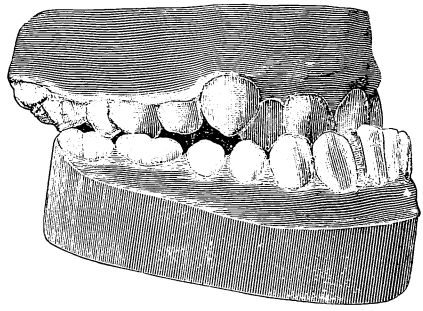


FIG. 1.

nothing left to do except to make more room by extracting one of the permanent teeth, which will usually be the first bicuspid; the cuspids take their place and the irregularity is corrected. But this imaginary case was one of those exceptional cases where the dentist was visited regularly, the teeth extracted just when they should have been and the eruption of the incoming teeth was so timed that the laterals were not locked in by the premature eruption of the cuspids. There are so many forms which these cases of overcrowding may take, that each case must appeal to the intelligent mind for the best treatment under the circumstances. Many can only be corrected by the skilful application of surgical appliances.

I have here a form of inherited irregularity (Fig. 1), from arrested development of the superior maxilla, beautifully illustrated in the models, to which your attention is invited. In this case you will see a most pronounced prognathism in the lower jaw, which has its appearance from a lack of development in the superior, while the inferior maxilla is about normal. In this family there are four children who inherit the superior

maxilla of the mother and the teeth of the father. These four children, two boys and two girls, will each have an apparent protrusion of the inferior maxilla, from lack of development of the superior, very similar in character to this one.

Evils of Premature Extraction of Temporary Teeth.

There is another frequent cause of irregularity and deformity of the jaws to which I will call your attention, and that is the premature extraction of the temporary teeth. It is intended by nature that the permanent teeth should follow the gradually absorbing roots of the temporary teeth, emerging at the margin of the gums as the temporary tooth drops off for want of further support. The temporary root serves as a guide to the incoming permanent tooth, it following in its wake along the line of the least resistance. When the temporary tooth is permanently extracted three things may take place. There is, first, an absorption of some part of the alveolar bone which forms its socket; second, a probable contraction of the jaw at that point, and third, the loss of the guide for the permanent tooth. The socket in the bone occupied by the temporary tooth is filled in with bony or tough cartilaginous tissue and the gums form a tough fibrous union over that part. The permanent tooth is now pretty well wedged in below, in the body of the jaw and left to burrow its way out as best it can, often preferring to penetrate the thin plate of bone on the bucco-labial side, finding this the point of least resistance and emerging outside of the ridge forming an ugly irregularity. But there is still a more important point to consider in the premature extraction of the temporary teeth, and in this instance we allude more especially to the temporary molars. If these are extracted before the first molar has been erupted, it being so much farther advanced in its development and its journey to the surface than the bicuspids, and there being nothing to prevent its migrating

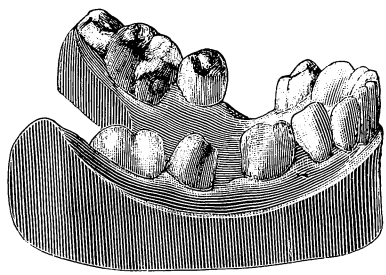


FIG. 2.

anteriorly, it will in nearly every instance occupy the space almost directly over the second bicuspid, which when *it* comes down, if it ever manages to get out at all, will be forced out buccally or lingually, not having room to get into its proper line.

Migration of Teeth.

In the *Dental Cosmos* for June, 1899, the possibility of this migratory movement of teeth is beautifully illustrated in an article by Dr. W. Mitchel of London. He shows five cases, by models, where the second molars have migrated to the position originally occupied by the first molars, these having been extracted just a little previous to the time of eruption of the second molars. These are not cases where the apex of the roots have remained *in situ* and the crowns simply leaned for-

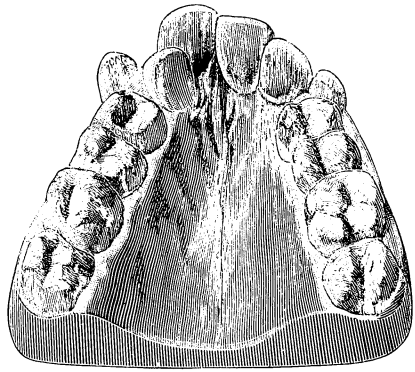


FIG. 3.

ward. The entire tooth has migrated to a new position in the jaw and stands upright with a correct occlusion. I also have a case, seen in Fig. 2, clearly showing migration of the second bicuspid across the space formerly occupied by the first molars, taking up a position next, and contiguous to the second molars. This marked migratory movement of teeth is not often met with in a healthy mouth after maturity, but occasionly occurs in connection with severe cases of pyorrhea or other inflammatory conditions involving the alveolar bones. It is found "only in young persons, when the blood supply is rich with nutritious materials, and when waste and repair go on rapidly." I have called special attention to this possible movement of teeth in childhood, to illustrate the importance of the retention of the temporary teeth, until the time when nature intended they should be lost, the dangers of extracting which I have called attention to in another part of this paper.

Before closing I will add a few words on the forms of appliances most practical and expedient, in the average cases of irregularity, as they present themselves. Where teeth from neglect, malformation, or arrested development of one or both of the maxillæ, have erupted in such position as to necessitate their crowns being pushed into line, the appliance should be selected for the performance of the work, which will be most positive in its action with the least pain and create the least inflammation to the parts, thereby lessening the danger of destroying the pulps of the teeth being moved. To accomplish these several ends, there is no appliance which will equal the screw in some of its multitudinous forms. There are so very few cases where it cannot be used, its application may be considered universally possible and the results obtained

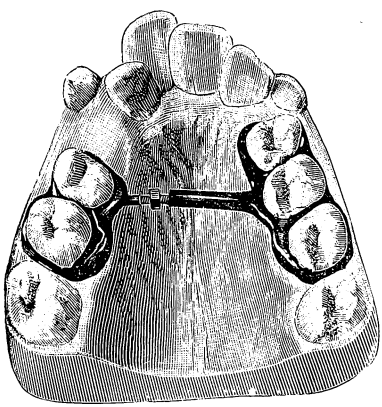


FIG. 4.

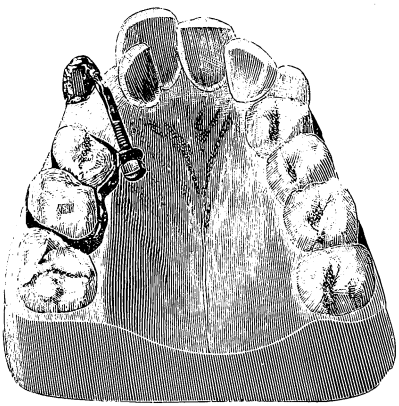


FIG. 5.

from it, is incomparable in superiority to those of any other form of appliance of which I know. Screws have in addition to all the advantages of all other appliances, that of being quicker, less painful, more positive, more powerful and more easily kept in place.

I have here a few practical cases to which I will invite your attention, not so much for any originality of ideas developed, but to illustrate the speed and the great practicability of the screws. These models here presented are various phases of the same case in progress, but will serve to illustrate several forms of appliances, as the case was one of some complication, illustrating several forms of irregularity commonly met with in practice. Fig. 3 illustrates the case before commencing the process of regulating; the narrowness of the arch will be observed to have produced a badly crowded condition, which gave the patient, a

little girl, a decided hatchet-faced appearance, detracting very much from her beauty and expression. Fig. 4 shows the spreading of the arch in progress, the right first bicuspid having been extracted. This part of the operation occupied about ten days, in spreading the arch one-half inch. This form of application of the screws for spreading the arch is an exceedingly practical one and having used it in many cases with the most positive, speedy and satisfactory results, I can most conscientiously recommend it. It is applicable to any case of arch spreading in the superior maxilla, and I firmly believe there are few operations which will give such pleasing results with such a small outlay of energy. To give a narrow sharp face a pleasing rounded appearance is a result so noticeable, its appreciation is assured in the beginning. Fig. 5 illustrates the form of the screw used to pull back the cuspid to the position occupied

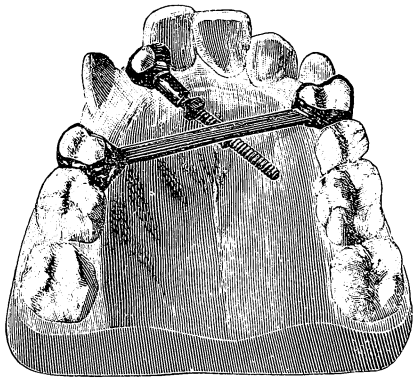


FIG. 6.

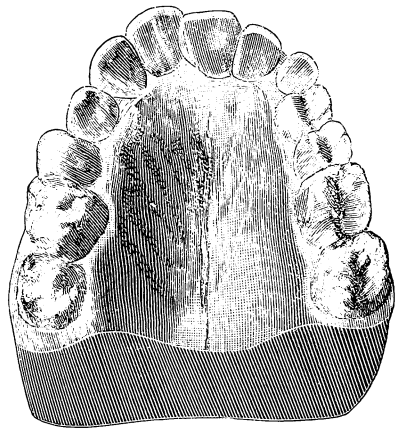


FIG. 7.

by the first bicuspid which was extracted as stated. It will be observed that this tooth had to be moved nearly or quite one-half inch, and though cuspids are considered so difficult to move, in this case the force was so positive, it came promptly into place with very much less trouble than was at first anticipated. Fig. 7 shows how successfully this was done. Fig. 6 shows the lateral incisor being moved into position in its proper line.

This form of appliance has been used in many cases, for pushing out teeth which had become locked in by the teeth of the lower jaw closing over them. The results have been speedy and positive in every case. Fig. 7 illustrates the case as completed, or rather treatment suspended for rest, as the rapidity of movement and extensiveness of the operation had somewhat exhausted the patient.

Oral Embryology.

By I. Norman Broomell, D.D.S.,
Professor of Dental Anatomy, Dental Histology and Prosthetic Technics, Pennsylvania College of Dental Surgery, Philadelphia.

Read Before the New Jersey State Dental Society, July, 1899.

In the proper consideration of this subject I can conceive of no more appropriate introduction than to briefly refer to the general subject of embryology, which includes an investigation into the mode of formation, and gradual development of the animal fœtus. The history of the subject is replete with well defined epochs, each of which represents for a period the theories or discoveries of some well-known investigator. While not a few of the older histologists were well informed in regard to very many important embryological facts, their opinions varied greatly, and they were all for a long time inclined to misinterpret certain vital points, and it was principally this latter fact which stimulated and encouraged further research.

Aristotle held views which were for a long time accepted as correct, his hypothesis being that all living creatures were generated in one of three ways, i. e., the egg was deposited, incubated and hatched (oviparous), or the fully formed and independent offspring was brought forth alive (viviparous), or a third way in which the being was accorded a spontaneous birth, this latter class including the lower order of animals, parasites, insects, etc. Little or no exception was taken to this theory with reference to the first and second modes mentioned, but by persistent investigation it was gradually proven that the number of occurrences in which generation took place spontaneously were much less frequent than had at first been supposed. In fact it was for a time acknowledged that spontaneous generation was never responsible for the development of insects or animalcules. More recently the subject has been again taken up, and I believe it is conceded at the present time that certain forms of uncertain infusoria are reproduced by a spontaneous subdivision of unicellular organisms (fission, fissipara).

It is no doubt a subject of general information that up to the time of Harvey (1631) there existed a misunderstanding in regard to the similarity existing in the generation of species be they of oviparous or viviparous origin. Previous to this there was supposed to be a distinct difference in the two modes of development, but Harvey's bold assertion that "all animals whatsoever, even the viviparous and man himself not excepted, are generated from ova," revolutionized the study of embryology, and established a fundamental principle (the magnitude and value of which was never fully known to him) through which all subsequent investigations were made blessed.

We find therefore the origin and a considerable portion of the early development of the embryo taking place in a similar manner in all animals, from the impregnated egg of the female, and this being the case we are particularly favored in our early investigations by using the egg of a fowl. I shall therefore direct your attention briefly to the history of the development of the chick.

Upon examining a longitudinal section of a hen's egg, we find in passing from the periphery toward the center the following structures: First, that part commonly known as the shell which is made up of variable proportions of organic and inorganic substances. To provide for the early process of respiration this structure is amply porous to permit the free passage of gases from without, inward and *vice versa*. The shell is made up of two distinct layers, but these of course are not directly or indirectly interested in the development of the embryo. Immediately within the shell is the shell membrane, which is likewise composed of two layers. These two layers are closely associated throughout their entire extent except in the district represented by the broad end of the egg; here they exhibit a marked tendency to separate, the outer layer remaining in close contact with the inner wall of the shell, while the inner layer remains as a direct covering to the white of the egg proper. In this manner an air-chamber is formed which usually increases with the age of the egg.

Immediately within this is what is commonly known as the white of the egg, which upon careful examination exhibits a sort of laminated appearance.

The next layer is known as the yolk, or that part which is essential to the production of the embryo, inclosed by a thin layer known as the vitelline membrane.

To simplify our study let us banish from mind all other parts of the egg and continue by describing the early changes which take place in the yolk. In fact, for our purpose it will be well at this time to consider that we have under discussion the development of an embryo, not particularly of the fowl, but of the mammalia as well. This spherical body may be com-

pared to a single cell, that part which is known as the vitelline membrane, or *zona pellucida,* corresponding to the cell wall; the body of the yolk, or *vittelus,* representing the cell protoplasm, within this the germinal vesicle, for the cell nucleus, while the individualized central area of the vesicle is given up to the nucleolus or germinal spot. Without further considering this primitive cell, so to speak, let us pass on to a description of the germinal membrane known as the blastoderm. The time at which this membrane makes its appearance is so variable in the different species that I shall make no allusion to this part of the subject. Primarily the blastoderm which lies upon the internal surface of the vitelline membrane is composed of two layers, and from these two layers the embryo is generated. In a very short time a third layer which makes its appearance, not, as might be supposed, upon one side or the other of those already

FIG. 1.

present, but between them, constituting the three primary layers of the germinal membrane, the epiblast, mesoblast and hypoblast. These three layers are found in connection with the early embryo of all vertebrates, and I question if not in all invertebrates.

Fig. 1 is a thin section through the blastoderm of a chick about the beginning of the third day, and show the two primary layers, the epiblast and the hypoblast, while the mesoblast is composed of all the cells between these two layers.

Following carefully the development of the embryo from this time we find that the outer layer of cells is productive of the following tissues of the mouth: the epithelium lining, the cavity and the enamel. From the middle layer or mesoblast, the dentine of the teeth, all the connective tissue group, blood vessels and lymphatics, together with the bones which form its framework, while the inner layer gives rise to the epithelial lining of the alimentary canal other than the mouth.

We now come to the consideration of that part of the subject in which we as stomatologists are directly interested, the embryological characteristics of the oral cavity and the tissues and organs contained therein. The results shown are from serial sections of human and sheep embryos; with the exceptions of the elongated maxillæ of the lamb there is no appreciable difference between the two. The early appearance of the entrance to the alimentary canal is found in the formation of an open cavity bounded by the primitive maxillary process above and the mandibular arch below.

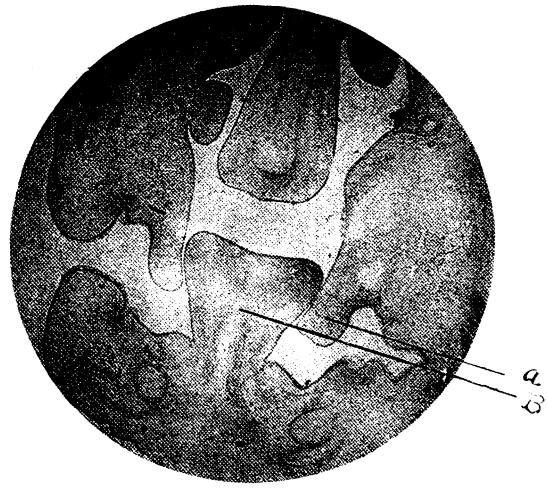


FIG. 2.—SECTION THROUGH HEAD OF HUMAN EMBRYO, X 40.

The cavity thus formed is the common buccal space, the upper portion being the respiratory or nasal section, while below is the true mouth. The cavity of the mouth, as such, does not exist until these two are completely separated by the palatal plates forming the future roof of the mouth, and it is interesting to follow this process.

Fig. 2 shows a vertical transverse section through this common buccal cavity. At this early period the lateral walls and floor of the mouth are manifest by certain cellular elements, but the roof of the cavity, as already

stated, is not complete until the palatal plates grow inward by a growth or prolongation of the superior maxillary processes (A), which now appear temporarily separated by the tongue (B). When these two processes which arise from the mesoblast unite at the median line, they establish a permanent horizontal septum, dividing this part of the stomodeum into a respiratory or nasal section and an oral section, the mouth. The cells entering into this part of the fœtal head at this time (thirtieth day) are of three varieties, being connective tissue cells, cartilage cells and epithelial cells, the latter being distributed in a layer of varying thickness over those parts destined to become the lining membrane of the mouth.

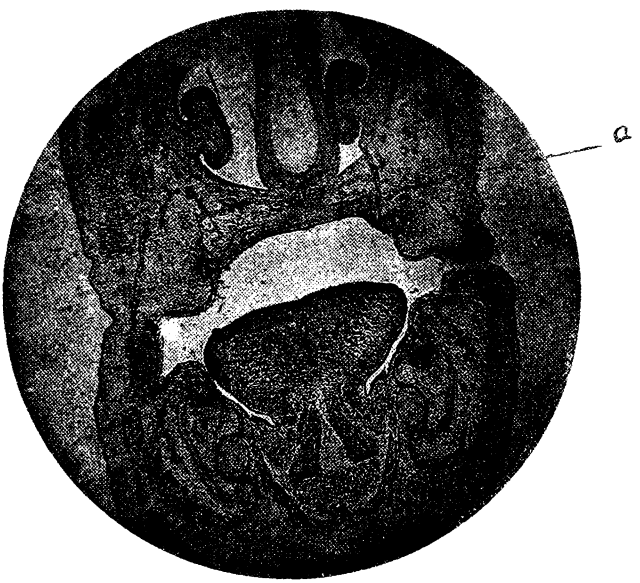


FIG. 3.—SECTION THROUGH HEAD OF HUMAN EMBRYO, X. 40.

Fig. 3. In this illustration (fortieth day) the superior maxillary processes are shown united at (A) and the permanent separation between the mouth and nasal cavity established. This embryonal bridge is for the most part made up of connective tissue cells, about isolated bundles of which osteoblasts arrange themselves, resulting in the production of two intermembranous bony plates.

In Fig. 4 a further advance in the generation of the hard palate is shown, the septum now being largely composed of calcified tissue. The

disposition for these primitive bony plates to exist as separate and distinct processes is exemplified at the median line (A) by a definite separation formed by the connective tissue sheath from which they are derived. Covering the surface of the hard palate there now appears a varying thickness of mucous membrane (B) in the substance of which are many mucous glands.

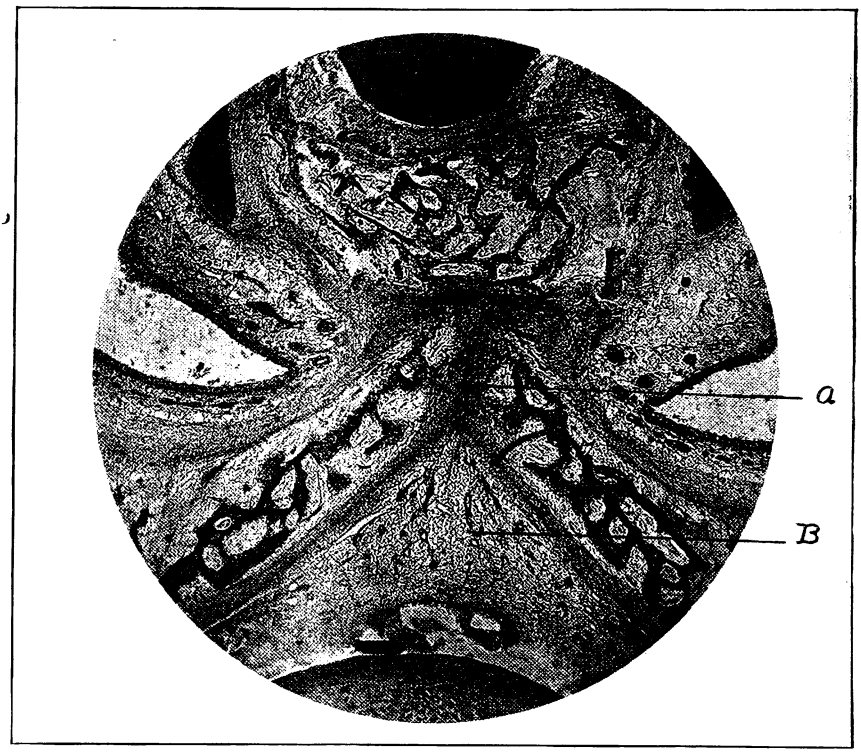


FIG. 4.—PORTION OF DISTRICT SHOWN AT "A" IN FIG. 3, X 200.

Fig. 5 shows under high power the connective tissue sheath at the median line, the active bone forming cells being thus kept apart until such time as the palatal suture is formed, to produce which osteoblasts finally establish themselves upon these separating bundles, and gradually ossification takes place.

We have thus briefly noted the evolution of the roof of the mouth; let us next consider the floor of the cavity; the tongue and its attached

muscles, together with considerable glandular tissue making up the bulk of this district. Fig. 6 is a vertical transverse section through the floor of the mouth about the tenth week in the human fœtus, or at a period somewhat later than that shown in the previous illustration. An examination of the parts in general at a time prior to this is of little value, save the early preparation for the development of the teeth, to which I shall refer later. The tissues and organs here shown will be recognized as the tongue

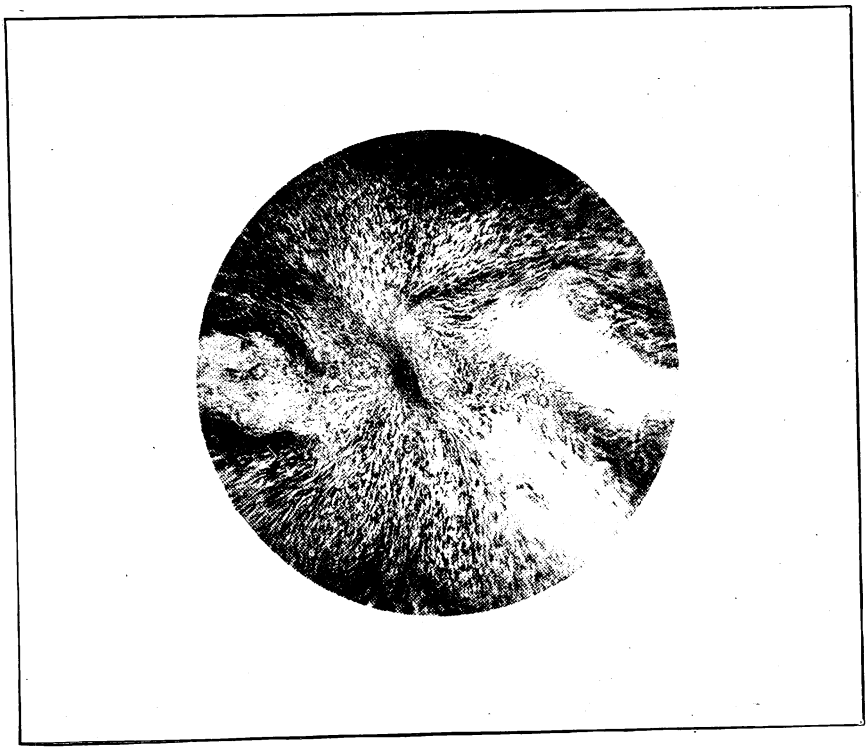


FIG. 5.—X 300.

(A), the glandular tissue (B), the forming jaw (C), with developing tooth germs at (D D).

There is probably no other organ in the body in which the arrangement of the muscle bundles is so complex as those making up the bulk of the tongue, this being one of the few parts in which the fibers interlace. This characteristic is most beautifully exemplified in the embryonal study of the organ. The tongue appears on the floor of the mouth between the

thirtieth and thirty-sixth day as a bud from the mesoblast covered by a layer of cells of epiblastic origin. The muscle fibers, be they intrinsic or extrinsic, are all of the striated variety. In a very short time and at a comparatively early period the tongue becomes an independent organism, presenting most of the characteristics common to it after birth.

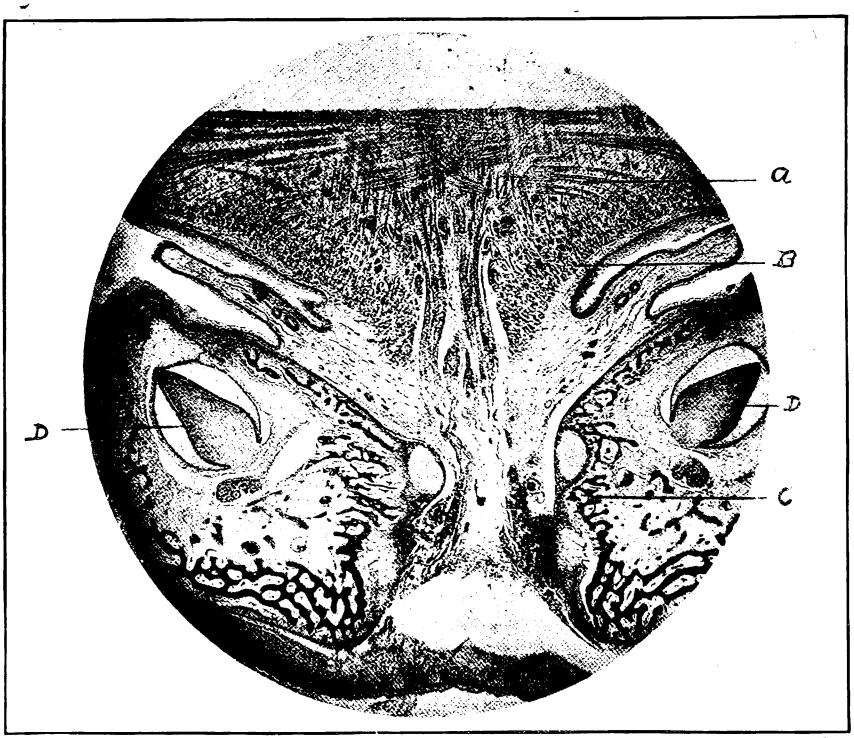


FIG. 6.—SECTION THROUGH BASE OF TONGUE AND MANDIBLE, X 40.

Fig. 7 shows a transverse section through the side of the embryonal tongue about the tenth or twelfth week, the muscular fibers within the field being principally those of the *genio hyoglossus,* some of the fibers of this muscle being disposed transversely and others vertically, and for this reason we have them shown in the illustration cut in various directions. About the only material change which takes place in this part of the organ as age advances, is shown by an increase in the thickness of the muscle bundles as exhibited in Fig. 8, taken from a thin section of the adult human tongue. This alteration appears as a general growth, rather than by a multiplication of the primary individual bundles. This part of the

tongue is derived from the mesoblast, while that portion shown in the Fig. 9 is developed from two layers of the blastoderm, the epiblast and the mesoblast. The district at (A) is made up of the fibers of the *superior lingualis* (B), the mucous membrane with its three characteristic layers, the epithelium, *tunica propria* and *submucosa*.

Not a small portion of the floor of the mouth is made up of another class of tissue which, although eventually a distinct organism, is composed

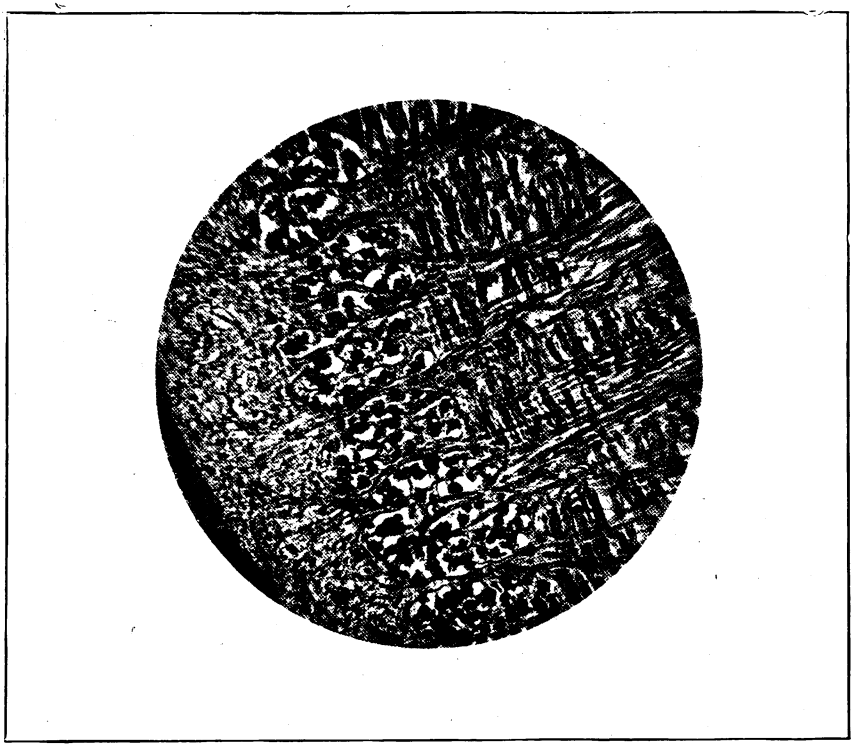


FIG. 7.—X 100.

almost entirely of epithelium. These cells together with connective tissue cells and eventually blood vessels unite in the production of a true salivary gland, the sublingual. Fig. 10 shows the early character of the tissue, together with its relation to surrounding parts. The section is one from the region of the premolar teeth, and is bounded above by the tongue, laterally by the borders of the jaw, and below by fibers of the mylohyoid and digastric muscles. Three distinct lobes or sections of the gland are observed, the two largest being separated by a reticular network of connective tissue.

The general character of these developing glands even at this early period (about the twelfth week) appears to be very similar to the matured organ, as shown in Fig. 11, being composed of a number of small tubes emptying into a single duct, constituting a gland of the compound tubular variety.

Let us next give some consideration to the embryology of the mouth in its entirely, and to do this it is necessary to make sections of the parts in various directions.

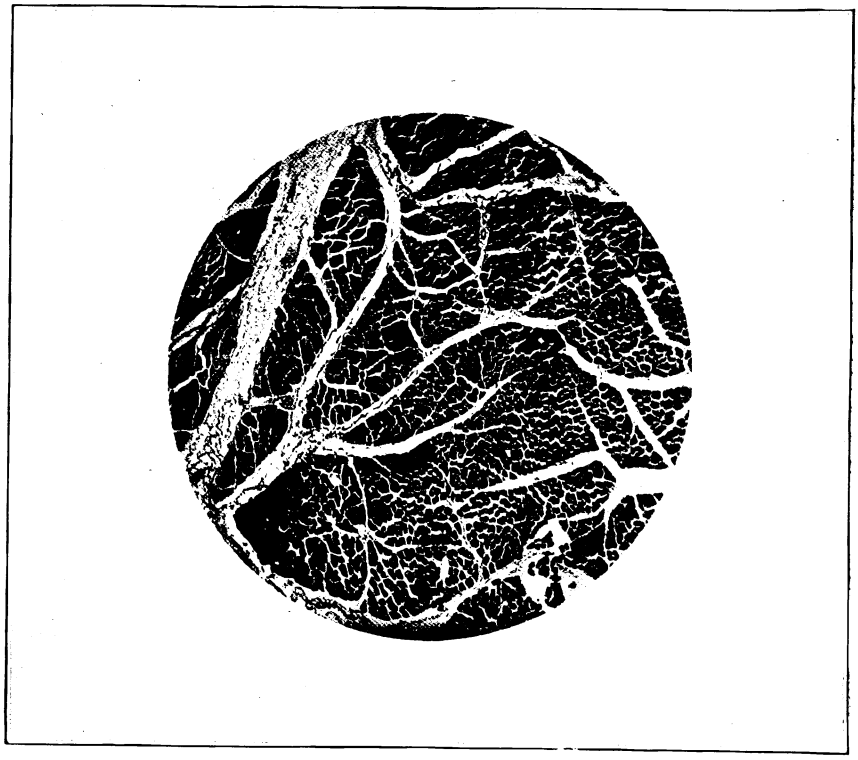


FIG. 8.—SECTION OF HUMAN ADULT TONGUE, X 40.

The growth of the cavity is usually studied, and probably to the best advantage, by vertical transverse sections, and I will first invite your attention to a number of sections made in this way, beginning at the lips and passing backward through the incisor region, and finally through the districts occupied respectively by the cuspids and molars. The period at which such an investigation is made has much to do with the character of

the tissue involved, but the time best suited to the purpose is included between the fortieth and sixtieth days. At this time nearly all the tissues making up the organs and parts which enter into the construction of the cavity have advanced to such a degree of perfection that the investigation may proceed with considerable satisfaction.

Fig. 12 shows a cross-section through one of the primitive labial folds about the period named. Little is to be observed in this district at this early period except the simple cells of three varieties which serve to

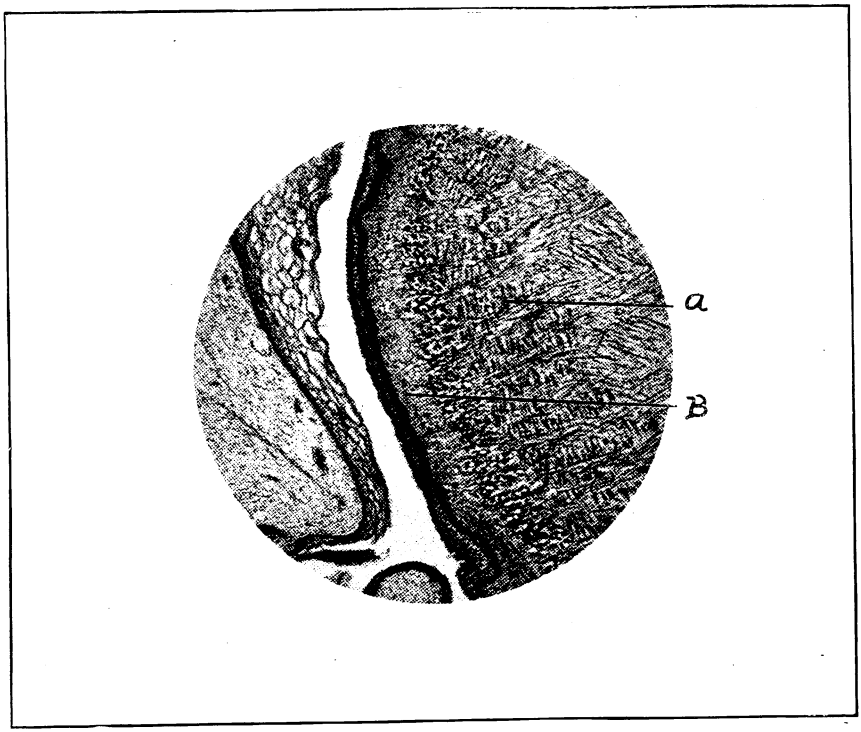


FIG. 9.—SECTION THROUGH SIDE AND BASE OF FOETAL TONGUE, X 30.

make up the parts, but our attention is at once attracted to the abundant thickness of the epithelium given to the lip. This is, however, not so marked as we might believe from the section, the condition being the result of the section being just within the lower, thus showing the importance of a definite knowledge of the location of a given section.

The next section* is one from the same subject, but somewhat to the

* Shown with projecting microscope.

distal of that previously shown, and we note beside a marked change in the relationship existing between the various cell layers, a body of cells of another character, those which are destined to become the cartilage of Meckel, and above which the younger layer of cells of the mucous membrane are observed outlining a new district. We see also a marked differentiation in the cells of the upper section, the future palate.

If we make a section through this same location say, about the forty-eighth day, we find a vast change in the appearance of the parts. The

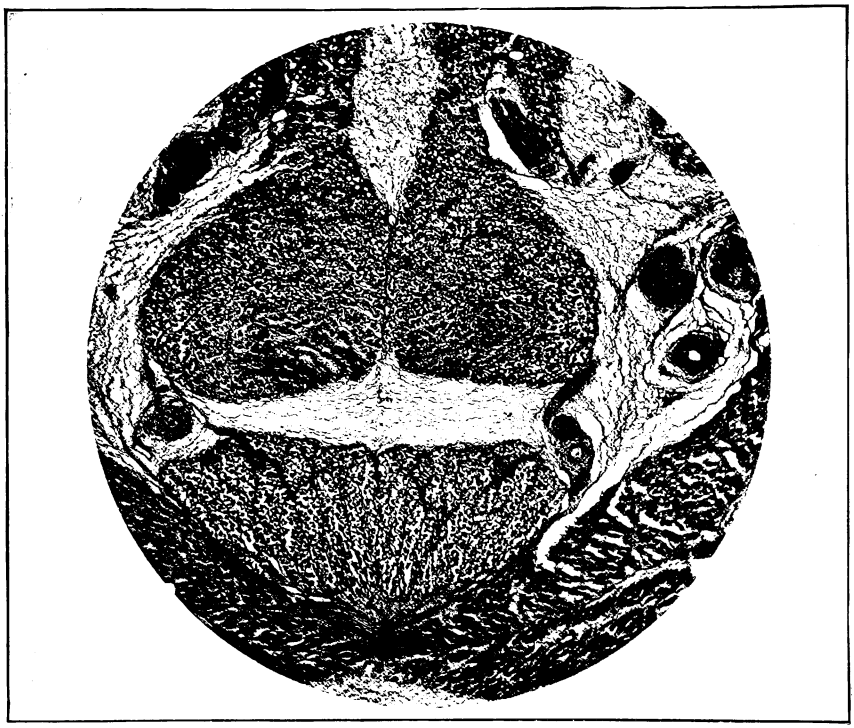


FIG. 10.—SECTION OF SUBLINGUAL DISTRICT, X 100.

buccal walls of the mouth, Fig. 13, have in a measure become complete by a union of the upper and lower sections, the union at this time being accomplished through the agency of the embryonal epithelium. A cartilaginous nasal septum has made its appearance, and active preparation for the ossification of the maxillæ is apparent. In the median line of the lower jaw we find a distinct separation in the body of cells forming Meckel's cartilage, and early preparations for the production of teeth may be seen at (A) by a dipping down of the surface epithelium.

A transverse section through the same district, the incisor region, about the sixtieth day, Fig. 14, shows all the parts strongly differentiated. Calcification has taken place to considerable extent in the lower jaw, the two halves being at this period and for some months after, separate and distinct. Many muscle bundles are observed beneath the jaw, and beyond these the integument with its numerous blood vessels and nerves, most of which are seen in cross-section. A cross-section upon the same subject at about the sixtieth day in the region of the cuspids, finds the tissues and

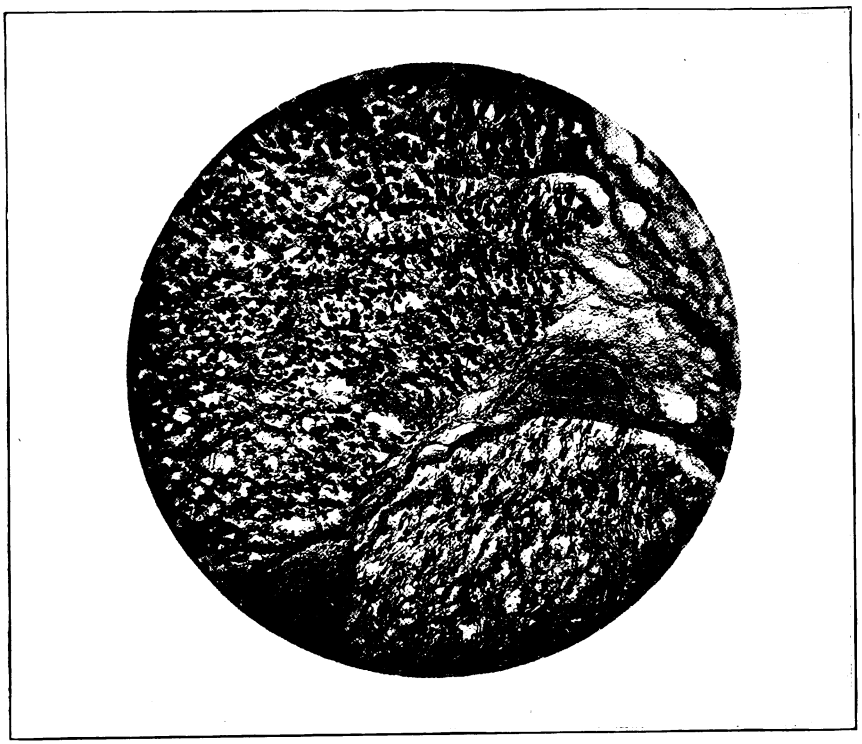


FIG. 11.—X 300.

organs advanced to a certain degree of perfection, see Fig. 6. The tooth germs of the cuspid teeth have their crowns outlined by the cells composing them; the tongue with its complex muscular arrangement has become a specialized and independent organ, while beneath it we see that beautiful product of the epiblast, the glandular structure, so plentifully supplied to the floor of the mouth in this locality.

If we pass still further back into the region of the molars the general appearance of the parts does not differ to any marked degree from that in the cuspid district, except in the general distribution of the muscular fibers of the tongue, and the appearance of the submaxilliary gland, here appearing in three distinct lobes or parts.

I have previously stated that sections made in the direction of those just shown are usually employed to study these parts, but much is to be gained by supplementing these with sections made in other directions.

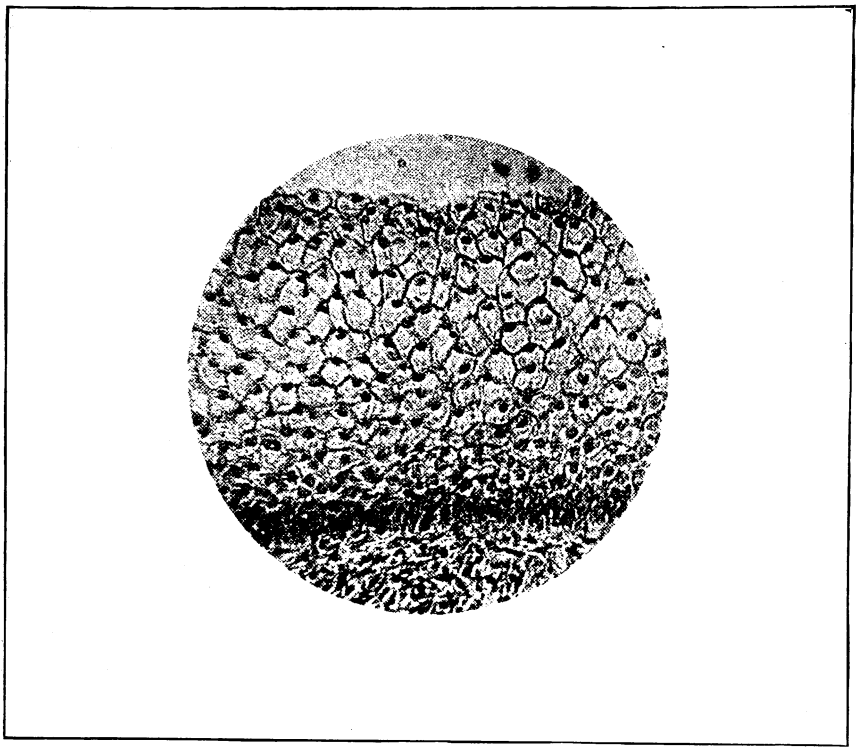


FIG. 12.—EMBRYONAL MUCOUS MEMBRANE OF LIPS, X 300.

Fig. 15* shows a longitudinal section, or one made from mesial to distal through the entire length of the jaw at or near the median line, the parts included within the field being the labial folds at (A), the hard palate at (B), and the mandible at (C), the tongue at (D), and the nasal chamber at (E). An examination of the lips shows them to be covered

* Full section shown with projecting microscope.

with a varying thickness of embryonal epithelial cells which are continued backward over the future alveolar ridge and thence to the hard palate above, or over the floor of the mouth and surface of the tongue below. At (E) fibers of the labial muscles are seen passing into the periosteum overlying the developing maxilla.

If we next make a section longitudinally from mesial to distal, but slightly to the right or left of the median line, as shown by the projecting

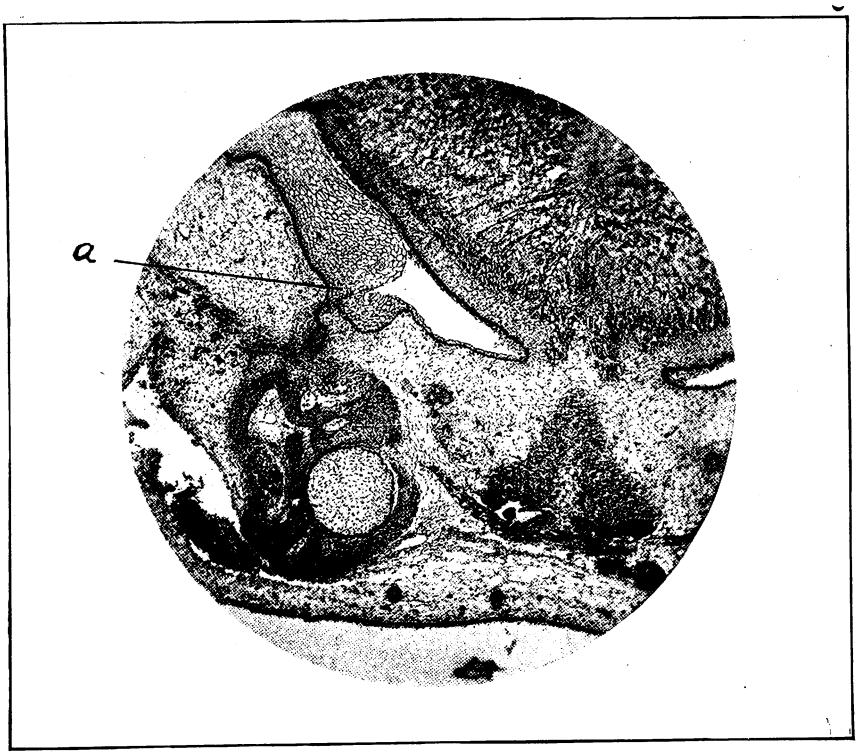


FIG. 13.—X 40.

microscope, we will find considerable difference in the appearance of the parts. As a result of certain cell differentiation we note the preparation for tooth development at various points. The exact location of this section is further recorded by a reflection of the epithelium over the side of the nasal aperture. The palatal plate of the superior maxillary bone is shown in longitudinal section, while a portion of the inferior maxilla is seen in transverse section.

The next section, also shown with projecting microscope, is one which illustrates to good advantage the early development of that district immediately above and giving support to the upper half of the mouth. (A A) represents the wings of the nose, (B) the cartilaginous nasal septum, which is continued backward by the medium suture of the maxilla. Reflexions of the surface epithelium are observed passing into and lining the nasal cavities upon either side of the septum at (C C), while at (D) an aggregation of cells from a mesoblast shows the location of a developing tooth germ in transverse section.

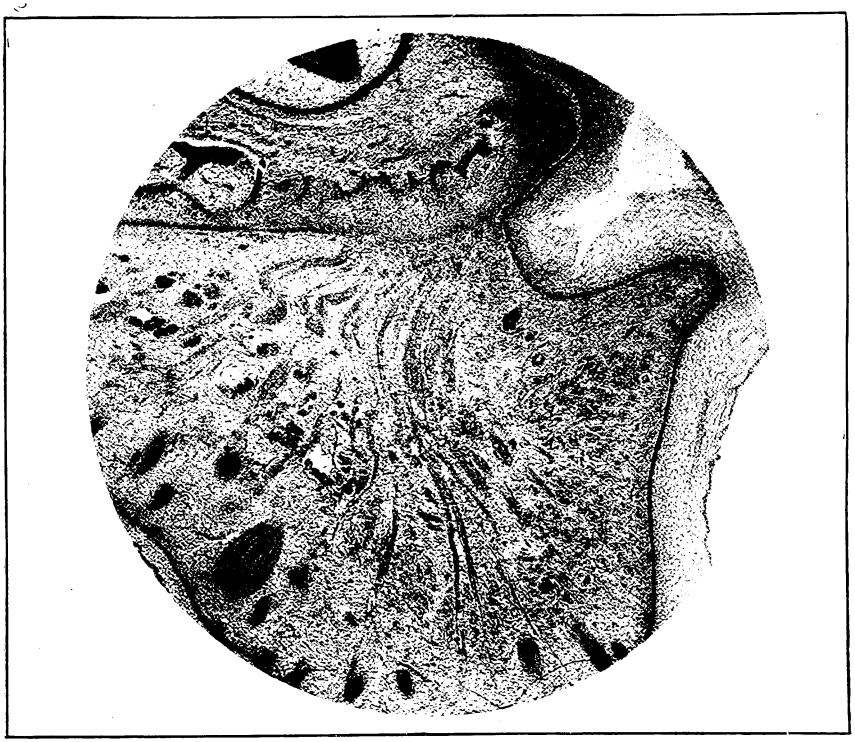


FIG. 13.—X 80.

A transverse section through the entire face* offers the best understanding as to the general character and developmental progress in the walls of the mouth at the twelfth week. So far as the general contour of the cavity is concerned it is but little different from that found after birth. The muscular structure within the tongue is advanced to a certain degree

* Shown with projecting microscope.

of perfection, and while the same tissue in the cheeks is somewhat later in making its appearance, the powerful bundles of the buccinator are distinctly shown in cross section at (B). Both the upper and lower jaws are distinctly differentiated from the surrounding parts, and reflexions of the periosteum are observed to dip down into the interior of these parts to form the future alveolar walls at (C).

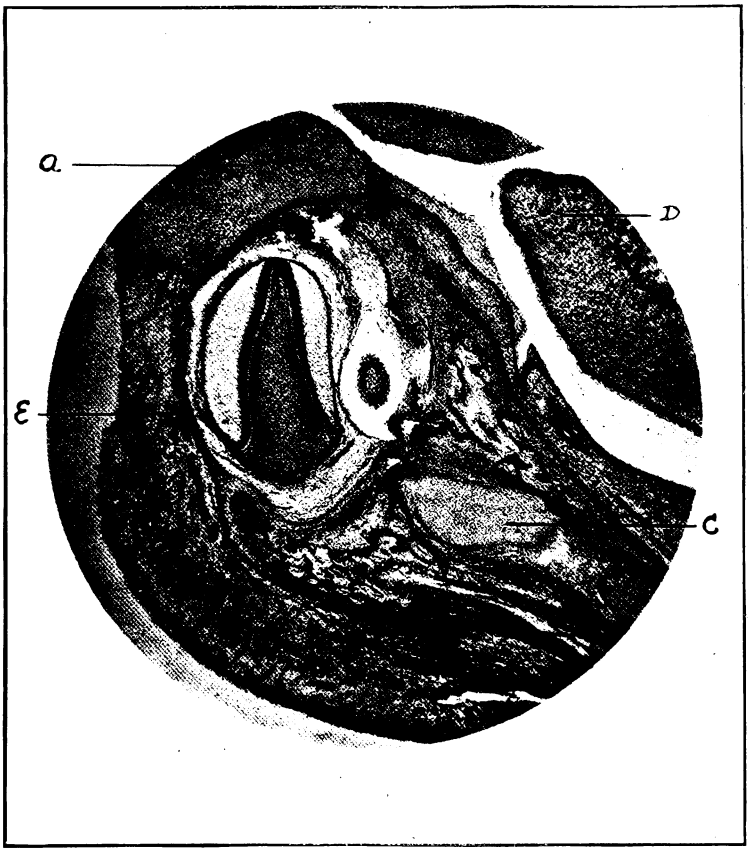


FIG. 15.—LONGITUDINAL SECTION OF MANDIBLE, X 40.

A paper upon the general subject included within my title when presented before a dental society, would appear incomplete and stripped of much of its real interest, if a goodly portion of it was not devoted to the genesis of the dental organs proper. Appreciating this fact I shall spend the balance of the time allotted me in a consideration of this subject.

(To be continued.)

Pulp Mummification.

By Owen E. Houghton, D.D.S., Brooklyn, N. Y.

Read before the Second District Dental Society, October, 1899.

About twenty-five years ago, in a fit of desperation over difficulties met in trying to remove the devitalized pulp from the roots of an upper third molar or wisdom tooth, I concluded to leave the pulp in the roots and watch results.

The pulp chamber was carefully wiped with carbolic acid, and then filled with os-artificial (oxychloride of zinc), and the usual amalgam filling finished the operation.

No inflammation or tenderness followed, and that tooth remained a member in good standing in the dental society of its fellows for many years after.

Another wisdom tooth was soon after treated in the same way, with equally good results.

Gradually, I came to treat all wisdom teeth in this manner, when the pulp needed to be destroyed. I found that the general result was that the percentage of failure, or after trouble, was less in these teeth, than in teeth where I had given my best skill and patience in trying to fill all root canals to their very ends. It was exceedingly rare I ever had trouble with a wisdom tooth so treated.

I never applied the term pulp mummification to this treatment, but called it pulp preservation.

I had not the courage, except in isolated cases, to extend the treatment to other teeth, and continued for years to inflict the tortures of the nerve broach and drill upon my patients, in a conscientious effort to practice what was supposed to be the best methods taught by my dental college, my dental society and the text books, often with the result of exhausting the patience and nerves of both myself and patient, only to realize after all, in spite of my best skill and efforts, I had not and could not fill every root perfectly or to my satisfaction. Pericemental inflammation has, I believe, often been started from "monkeying" too much with the ends of root canals, especially in freshly devitalized pulps.

For years I have read with great interest all that has been printed in our dental journals about pulp preservation or pulp mummification.

The cobalt method of Herbst, of which Dr. Bodecker, of New York, wrote such a glowing account in October *Cosmos*, of 1892, made a great impression on me, but I could not see wherein it was superior to the

oxychloride of zinc method I had practiced for so many years with good results, and cobalt being a first cousin to arsenic itself, I did not dare to trust it.

In November *Cosmos* of 1895, Dr. Soderborg, of Sydney, Australia, published his formula for a pulp mummifying paste, giving his method of treatment, the results of several experiments, and his experience for one year in its successful application. It was to my mind the ideal formula I had so long looked for, and is as follows:

Thymol,
Dried Alum,
Glycerol, equal parts,
And oxide of zinc, q. s., to make a stiff paste.

Thymol, the antiseptic, dried alum, the best mummifying or tanning agent, oxide of zinc, the white color retaining medium, and glycerol, the penetrating and binding agent.

I began the use of this paste for pulp mummification in July, 1896. Up to date, I have the diagram record of three hundred and seventeen teeth where the pulps had been devitalized by me, and this paste used for mummification of pulps left in root canals. This number does not include shedding teeth so treated by me, as I keep no record of operations on shedding teeth.

Report on 317 Cases.

Of the three hundred and seventeen cases on record, I have yet to report the first failure, not a single abscess or discolored tooth, except from the amalgam filling, not one lost to my knowledge. There is scarcely a day in my general practice I do not see one or more of these teeth, and have always found them in perfect health.

These treatments were not confined to molars and bicuspids, but cuspids and incisors also were treated by this method. They were not confined to any class of patients; rich and poor, old and young, sick and well, were subjected to the same treatment.

I have had but two opportunities to open any of these teeth after treatment.

First case was a left upper second molar treated six months before. In attempting to extract the wisdom tooth root adjoining this tooth, my forceps broke out the filling. I removed the oxyphosphate and paste, and found the root canals vacant as far as I could discover. The paste was replaced and tooth filled as before. This was two years ago. That tooth is all right today.

Second case was where filling broke out of lower first molar. Again the canals empty and no odor except a perceptible one of thymol. This tooth had been treated two years before.

My mode of treatment differs but little from that practiced by Drs. Soderborg and Waas. I will give it as I think some details, useful, have been omitted by both.

Method of Mummifying Pulps.

After the pulp is devitalized, I open up the chamber, remove its dead contents, and all I can of the pulp in the openings of the canals that can be reached and removed by the ordinary wire explorer. Always keep chamber sterilized with dental meditrina, then dry out thoroughly with hot air syringe, fill entire pulp chamber with mummifying paste and carefully seal with oxyphosphate cement. Fill the tooth with whatever material you prefer, and dismiss your patient with the assurance that the tooth will never bother her again.

In bicuspid teeth, I frequently enlarge the pulp chamber with a bur that I may be able to put in a larger quantity of the mummifying paste. With incisors and cuspid teeth, I bur out pulp half way up the canal, dessicate, fill empty part of the canal with the paste, seal up with oxyphosphate and fill with gold.

You may wonder why I treat the single canal teeth in this manner, when the pulps can be easily removed and the canals filled.

I will be candid, gentlemen. I positively believe from my experience that I run much less danger of pericemental inflammation when I leave a small portion of the pulp in the end of the root and mummify it, than I do to tear it away with a nerve broach, or guess at its length with a drill (we thought it dead, but our patient knew better) ; and again the operation of filling the canal of the root is seldom *perfectly* accomplished, and even when it is so done, you have, on some occasions, been rewarded with an abscess.

It was my fortune to treat the left superior lateral tooth for a lady a few weeks ago. I found a small alveolar abscess at end of root. Patient stated the root had been filled twenty years ago, and by one of the best operators in this State. The abscess had been there from the first year the tooth had been filled I opened up the canal and removed as perfect a gold root filling as I imagine can be made by the most expert. I mention this only to prove that our most careful and perfect root fillings do not always prevent abscess.

It is possible that, in no distant future, some of my mummified pulps may be heard from in form of an abscess. If it does occur, I can assure you I will have no trouble in getting into the canal and treating the tooth.

To those of you that have but little faith in pulp mummification, let me recommend that you try it on shedding molars of children, where the

pulp becomes exposed and the little one comes to you with an aching tooth. Destroy and remove pulp from chamber only, fill chamber with mummifying paste, and fill cavity with oxyphosphate. You will find this a most successful method of treating such teeth.

I have my mummifying paste made up fresh about every two months. In about that time it becomes so dry and stiff as to be hardly workable. At the end of six months, it is hard and dry as gunpowder.

Application of Arsenic Prior to Mummifying.

As the devitalization of the dental pulp is so important a factor in this mode of treatment, and so much has been written about the evils attending the application of arsenic to the dental pulp, I will here give you the formula that has been used by myself, and my uncle before me, for more than forty years.

Acetate of morphia.....20 grs.
Arsenious acid .....10 grs.
Tannin .....10 grs.

Triturate thoroughly

Apply to exposed pulp on small pellet of cotton saturated with carbolic acid, seal with oxyphosphate or soft gutta percha.

This preparation has been uniformly successful in my hands. I would recommend its renewal every year at least, as in time the arsenic is liable, owing to its great specific gravity, to become separated from the other ingredients.

In pulp mummification it is seldom necessary to make a second application of the arsenic. The pulp in the chamber can, as a rule, be burred out without pain, while that in the canals still retain considerable vitality. I do not hesitate to introduce the paste in the chamber and seal up a tooth in this condition, rather than make the second application of arsenic. Am careful not to use much pressure. The only evil result experienced in such a case is a slight feeling of uneasiness for a day or two. That is the last you hear of it.

Now, gentlemen, I have given you my experience in pulp mummification. I will admit it is a most radical departure from the regular method of dental practice, but I feel assured it will never lead up to such disappointment as copper amalgam and cataphoresis brought to hasty advocates.

I thought, perhaps, it would fall to my lot to be the first one in this section of the country to bring this treatment to public notice, backed up with the result of three or four years' experience, but New Jersey got the start of me. Dr. J. A. Waas read a paper before the New Jersey State Dental Society in July, 1898, on pulp mummification, which was published in ITEMS OF INTEREST, page 742, Vol. XX.

Dr. Waas used the same method as myself, and began his treatment at the same time, i. e., January, 1896. He gave his experience in the treatment of sixty-one teeth with not one failure to record. He had then had two and one-half years' experience. In this paper I supplement his testimony with three hundred and seventeen cases, and nearly four years' experience in pulp mummification. Most of you will remember, and it was not long ago, how the big guns and wise men of our profession (?) taught that it was *"a crime to destroy the dental pulp."* Most of us are today reaping a harvest of putrescent pulps, pericementitis and alveolar abscess from attempting to live up to such teachings. Capped pulps was the principal cause of these disasters. The death of the pulp after the tooth has once been filled is, today, I believe, the cause of more suffering and loss of our patients, and more anxiety and loss of reputation to ourselves, than all other causes put together in the dental line. In the future I do not intend to take the chances I have in the past, in capping pulps.

Pulp mummification has come among us to stay. The profession and dental journals have shown great interest in this subject, the past year in particular. In April last, the ITEMS OF INTEREST, owing to numerous inquiries from dentists, republished Dr. Soderborg's article on pulp mummification, which appeared in the *Cosmos,* November, 1895. Last May the editor of the *Cosmos* gave us nearly a four-page editorial on the subject. I will quote the portion of it that interested me most. He says:

Opinion of Dr. E. C. Kirk.

"An important feature in relation to the general introduction of mummifying methods of pulp treatment should not be lost sight of, viz., the tendency to their careless and indiscriminate use and to encourage slovenly and imperfect operations.

"It is far less difficult to seal a pallet of mummifying paste into a cavity, complete the operation at a short single sitting, and collect the fee upon its completion than it is to do a thorough canal operation, and the very ease which this short cut through an essentially difficult operation, to the fee for it, confers, is a dangerous temptation to degrade the high standard of dental work which should always be maintained. Unless it can be shown that the mummifying method is something more than a deceptive device for postponing the eventual development of apical disturbances due to ultimate failure of the protective character of chemical applications to the pulp, it should be undertaken with extreme caution until the records of its successful use have carried it beyond the purely experimental stage.

"The view here presented is not intended to be condemnatory of the methods under consideration, nor upon the principle upon which they are based, but merely as a caution against a general adoption of them as methods of routine practice at this stage of their history.

"The mummifying method is a direct exponent of the difficulties in the way of the older methods of canal treatment based upon the principle of complete mechanical removal of the organic canal contents. It has been claimed by some operators that no pulp canal presents insurmountable obstacles to complete mechanical cleansing. While we are willing to admit for the sake of the argument that the claim may be true for those that make it, there is no question that many cases of canal treatment occur which are beyond the ability of operators of more than average skill to successfully cleanse and fill by strictly mechanical means. Hence the necessity of some method by which the average practitioner can deal successfully with this class of cases."

Dr. Kirk kindly admits there *is* the necessity for a *method* to treat *successfuly,* teeth, where the pulps cannot be removed by mechanical means.

Well! If a method is found that will accomplish this, where is the logic in not using it in teeth where the pulps can be removed, especially when it is simpler and better results are obtained?

Pulp mummification solves the problem. There is no excuse for "slovenly or imperfect work," in pulp mummification. You will find the imperfect work in canal filling.

I believe that four years of practical tests, in hundreds of cases without a single failure, goes far towards proving that pulp mummification is something more than a *"deceptive device."*

How I Crowned a Decayed Root.

By D. W. Barker, M.D.S.

Read before the Second District Dental Society, October, 1899.

A first upper bicuspid had had a Logan crown, which, after being worn several years, became loose; the pin hole was found to be much too large for the Logan pin and tapering to the edge of the root, forming a funnel-shaped hole, and in addition, decay had caused a large cavity on the posterior side extending from the pin hole to the exterior of the root and quite deep into the root.

First a pin wire of German silver of medium size was selected and cut somewhat longer than required; thin platinoid was then wrapped around the wire tight and the edges soldered forming a tube, which fitted the pin wire snugly; the outside of the tube was then roughened with a sharp blade, then the tube with the wire inside it was set in the root and amalgam packed solidly around it and also filling the cavity of decay;

the tube and wire remained in the root until the amalgam had set, the pin was then removed and the amalgam and tube dressed down flush with the root and I thus had a solid pin-hole into which the pin fitted with absolute precision.

A piece of thin platinum was cut to roughly fit the root, a hole cut for the pin, the pin passed through it, adjusted to place, withdrawn and soldered together, again replaced and the platinum burnished to the face of the root and trimmed; to this a plate cuspid tooth was fitted and soldered, thus making what is known as a Darby crown, and set with cement in the usual way.

Making Amalgam Alloys.

By W. H. JONES, D.D.S., Clinton, N. Y.

Read before Fifth District Dental Society, October, 1899.

Early History of Amalgam.

Silver amalgams and amalgam alloys have been in use by the dental profession for three-quarters of a century, and have certainly preserved for years of usefulness thousands upon thousands of teeth which could not have been filled or saved with gold or tin. Amalgam was first brought to the attention of our profession generally by J. L. Murphy of London in 1837, in a treatise upon "The Cure and Preservation of the Teeth," and in 1843 by Dr. O. Taveau of Paris, in the fifth edition of his work "Hygiene of the Mouth." These gentlemen speak of having used the *Silver Paste* for several years. Dr. Wm. H. Truman of Philadelphia, to whom we are indebted for some of the data given, believes that silver amalgams were first used about 1820.

The silver paste was composed of pure silver leaf or of coin-silver filings combined with mercury. The silver was triturated in a mortar with an equal quantity of mercury until combined in the form of a stiff paste. The prepared cavities were filled with this paste and required two or three days to harden thoroughly. Although these fillings discolor badly they were notable tooth-conservers. During our Civil War thousands of teeth were filled and saved with coin filings and cuttings, for our soldiers. Cavities were excavated with improvised instruments. The men furnished the silver and the surgeons the mercury.

Amalgam alloys were used in England in the early forties. Silver was combined with the same metals used to make alloys at the present time, viz.: Tin, gold, copper, zinc and platinum.

The first practical amalgam alloy used in this country was brought to the attention of the dental profession by Dr. Wm. M. Hunter of Cin-

cinnati during a meeting of the American Dental Association held in that city May, 1855. The formula of this alloy known to the profession as Townsends' amalgam, is: Silver, 44 4-10; tin, 55 6-10. Dr. Hunter showed a number of amalgam fillings in the mouths of patients to several professional friends, giving the formula and directions for making and using the alloy. Dr. Elisha Townsend, a famous dentist of Philadelphia, was most favorably impressed with the value of the material, and at a meeting of the Pennsylvania Association of Dental Surgeons held October 9, 1855, gave to the members the formula and instructions as given him by Dr. Hunter, and at a special meeting held October 16, 1855, said regarding amalgam, "I do not advocate it to the exclusion of gold, or in places where a *good* gold filling can be placed, but there *are* teeth worth saving, if even for a short time, where any filling requiring much pressure to compact it would be inadmissible, and here a plastic material is invaluable." I know that *there are* some prodigies who *are never* baffled, who never see a tooth they cannot fill with gold. I am not a prodigy, and I do often see teeth my patient will thank me for saving, if even for a few months, which I have not the skill to fill with gold."

At about the time when the "Townsend Alloy" was brought out, Dr. H. G. Luther of New York City gave to the profession a formula for an amalgam alloy, which was popular for many years and was on sale by S. S. White as late as 1868. The Luther formula was: Silver, three parts; cadmium, two parts; tin, one part. The cadmium and tin were melted together, then filed up and an equal quantity by weight of precipitated silver added and thoroughly mixed. Cadmium must have been controlled by the mechanical mixture, as in later formulas this metal when melted in the alloys has proven a very *reliable* pulp-destroyer, and should never be used in an alloy. Of the prominent dentists of that period, Dr. Jas. M. Harris, Dr. J. F. Flagg, Dr. Daniel Neall and Dr. Jas. E. Garretson were favorably impresed with the value of amalgam as a tooth conserver, while Dr. J. D. White and Prof. Buckingham were the most bitter of gold bugs. They condemned the use of amalgam under any conditions. Dr. White was undoubtedly prejudiced without a logical argument. As one of the editors of the *Dental News Letter*, he never lost an opportunity to discourage even an experimental use of amalgam. Dr. Townsend was probably somewhat influenced by the attitude of Dr. White and other intimate associates toward amalgam, and wrote a paper giving advice to dentists using the material, which was published in the *Dental News Letter* in October, 1857.

The points cited were care in the preparation of cavities and that the material should only be used in cases where gold fillings could not be made, and where the patient could not afford to pay for gold. In

the same issue of this journal, Dr. J. D. White reviewed and commented upon his friend's statement, expressing pleasure to see that he was backsliding and followed with an arraignment of amalgam which was a series of wrongly diagnosed incidents of office malpractice, as the following quotations will show:

"We have two cases under treatment now where a large portion of the inferior maxillary has been lost by the use of mercury. We are now operating for a patient who had both of the inferior wisdom teeth plugged with the new amalgam six weeks ago: It had not turned black; the entire buccal surfaces were plugged. The whole remaining surfaces of the enamel were whitened as if an acid had been acting upon them and the gums and cheeks presented a thickened and whitened appearance; as if a strong stimulant had been held in contact with them. One week from the time we saw these teeth, one of the cheeks ran into ulceration. The plugs were removed and in ten days the parts resumed a normal appearance; but the whiteness of the enamel remained."

Influenced by these persistent and unjust attacks and broken down in health, Dr. Townsend a few months before his death published the following letter condemning the use of amalgam. Had he been in full health and active practice at the time, he probably never would have written the following communication, which was published in the April, 1858, issue of the *Dental News Letter*:

"Messrs. Editors: I promised to report to you any change in my practice in the use of amalgam for filling teeth founded upon further experience. In all that I have ever said or written upon amalgam, I have been very careful not to advocate its use, except in these cases which could not be filled with gold, and where extraction was the only alternative. I find my name has been used as authority for its indiscriminate and unlimited use, which I certainly never intended or supposed could happen. I wish now to say to the profession that I have entirely abandoned it and shall never use it again in my practice. I have come to this resolution for reason which I shall now state. In many of the cases where I relied upon it and expected to have the best result, it has entirely failed: As in the buccal cavities in molars where they extend much beneath the gums, I found in many mouths the material remained white and clean, in others it became very black in a few days, and in almost all cases upon removing the filling the under side was blackened and the same color given the teeth. Again in the infirm teeth, for which it seemed the only thing, and for which it was best adapted by its plastic nature, many of them have had to be removed, owing to the separation of the gums caused by the tight closing of the previous vent for the escape of pus. Therefore, I have come to this broad conclusion, that a

tooth so infirm as to need a soft filling, would be best removed for the health of the mouth and the health of the patient; and that my practice hereafter will be to advise their removal and then leave the responsibility with the patient.

ELISHA TOWNSEND."

The absurdity of these conclusions as we see and understand them today, need no comment. Progressive members of our profession, however, had recognized the necessity and value of a plastic filling material and were confident that amalgam conservatively used was a most desirable aid in saving the teeth. Of the well known alloys which soon appeared upon the market, Townsend's, Townsend's Improved, Walker's, Arrington's and Holmes's were all based upon the Hunter formula. In all tin was the predominating metal 58 to 68 per cent., modified by silver 30 to 42 per cent., and in some alloys a small percentage of gold, platinum, antimony or zinc was incorporated. These alloys were soft without much edge-strength, set slowly, bulged or "flowed" badly, yet saved thousands of teeth.

The Hardman and Lawrence alloys contained a larger proportion of silver, 47 to 50 per cent.; tin, 45 to 47 per cent., modified and strengthened by copper 5 per cent. They set more quickly, bulged or "flowed" less and were much harder than the heavily tinned alloys.

Experiments by J. Foster Flagg.

Prof. J. Foster Flagg was one of the first dentists to make a systematic study of the properties of amalgams. Beginning his experimental fillings in 1855 with the Hunter formula, in which tin predominated, he gradually changed the proportion of the metals, until in 1870 he was using an alloy of silver, 59 per cent.; tin, 41 per cent.

The first scientific experiments to determine the physical properties of amalgam alloys were conducted by Dr. Flagg and his associates, Messrs. Eckfeldt and Du Bois, expert metallurgists and assayers with the practical clinical assistants, Drs. S. B. Palmer and Henry S. Chase.

Three separate samples of all the alloys upon the market were purchased and analyzed; the majority were found to contain about 57 per cent tin, 42 per cent silver.

The qualities of these heavily tinned alloys had already been subjected to continual experiment and clinical observation. So after a number of test experiments the proportions were inverted as a basic formula. Hundreds of combinations were made and tested in the laboratory and those which responded favorably were given thorough clinical tests; not for a few months, but for a term of years. The results of these experiments and the physical properties of the various modifying metals used

to control shrinkage, edge-strength and color together with explicit and clear instructions for making and manipulating amalgam alloys were freely and clearly published for the benefit of the dental profession. The result of these experiments have recently been partially rediscovered and even more freely given the profession, but they are clothed with technicalities and mystery, and would lead the dental world to believe that the simple processes used in making amalgam alloys require a post-graduate course, and a number of complicated and intricate instruments. Nothing is more absurd.

Of the metals which have been found of value in combining and controlling amalgam alloys, silver, tin, copper, gold and zinc have proven available. The properties of these metals will be briefly given.

Silver. The dominating metal of all good alloys expands in setting, has good setting qualities and edge-strength, yet has a tendency to bulge or spheroid and discolor.

Tin. Retards setting quality, bulges badly, has no edge-strength but assists greatly in amalgamation, giving easy working quality and does not discolor.

Copper. Is the most important of the modifying metals: adds to setting quality and edge-strength, diminishes shrinkage, is a noted tooth conserver and controlled by zinc and gold aids in maintaining color.

Gold and Zinc Control shrinkage, increase setting quality, aid in working quality, and are of pronounced value in maintaining good color, but while gold strengthens an alloy in proper proportions one to three per cent., zinc reduces the strength of an alloy notably if more than two or three per cent. is used.

Formula for Alloys. The formulas for two alloys which Dr. Flagg and his associates gave the profession and which have stood exacting clinical tests for twenty-five years, are a submarine alloy used in badly decayed cavities, extending beneath the gums where dryness is impracticable. This alloy discolors but has all the desirable qualities of a good tooth conserver, it is composed of silver, 60 parts; tin, 35 parts; copper, 5 parts. A *Contour* alloy of good color and great strength and toughness used, as its name indicates, for contour work where dryness can be maintained during manipulation, is composed of silver, 63⅓ parts; tin, 33⅓ parts; gold, 3⅓ parts.

The *formula* of the various graduate-manufacturers of Northwestern University as purchased in the open market and assayed by Dr. Flagg and a reliable assaying house is as follows:

Dental Protective Supply Co.		
Fellowship Alloy.	Caulk's 20th Century.	Sibley's "Regb."
Silver.....67.73	Silver.....66.81	Silver..... 66.54
Tin.....26.33	Tin.....27.32	Tin..... 28.14
Copper..... 4.71	Copper..... 4.39	Copper..... 4.21
Zinc..... 1.23	Zinc..... 1.51	Zinc..... 1.06

Each is proclaimed as the only perfect alloy tested with special instruments, and prepared with delicate and expensive appliances.

The above formula makes a good hard alloy, but owing to the excess of silver it sets very rapidly, too rapidly for comfort should a slight interruption occur during the manipulation of the amalgam.

The formula which I present has undergone a clinical test of ten years, during which time a slight change has been made in the proportions of the silver and tin, however, a change of two or three per cent. in these proportions does not seem to alter the qualities of the alloy in the least. It is not given as a *perfect* alloy, but as a good and reliable tooth-conserver and all-around alloy. It has excellent setting and working qualities and does not shrink, has great edge-strength and good color. The formula for the alloy is as follows:

Coin silver or Mexican dollars.	10 oz.	Silver	54.2
Tin	6 oz.	Tin	36.6
Zinc	1½ dr.	Copper	6.1
Gold	1½ dr.	Zinc	1.1
		Gold	1.1

By taking coin silver or Mexican dollars we have copper, a metal hard to combine accurately and uniformly, already combined in an alloy with silver.

The function of tin in dental alloys has been previously mentioned. Zinc and gold as stated aid to maintain color and working qualities. The strength given by gold overcomes the weakness produced by zinc, also the barely possible ill-effects of the combination of copper and zinc as an alloy.

The instruments required in making dental alloys are inexpensive. A plumbago crucible four inches in depth and three inches in diameter, a pair of crucible tongs, an iron rod or poker and a shallow iron or soapstone mould; the lower section of a vulcanite flask makes an admirable mould. A coal fire, range fire preferred, or a Fletcher No. 40 gas or gasoline crucible furnace will furnish ample heat to make the melt.

The crucible is partially filled with pulverized borax and heated *red hot*. The coin silver or Mexican dollars are poured into the crucible, and when brought to a *red heat* the other metals are added all at the same

time. The tin *melts first* quickly and acts as a flux to reduce the other metals. When all are melted stir the molten mass thoroughly with a red hot poker or iron rod, pour quickly into the mould and cool rapidly by pouring water upon the ingot. The alloy will flow from the crucible easily. The glassy molten borax is often taken for a portion of the alloy by a novice. This should not be poured upon the ingot, as it adheres and forms a bubble in the metal; let it remain in the crucible for a future melt. The alloy is now ready to be filed up, and for this purpose a 14-inch double-cut bastard file may be used. The filings should now be shaken through a No. 80 sieve; this will separate the coarser particles and pieces. These can be reduced in a future melt.

Now take two pasteboard box covers about 6 by 9 inches for convenience in handling, cut the ends from one-sixth inch side of each cover, pour the alloy into one cover, shake from side to side and blow or pick off the foreign substances which will come to the surface. Now pour into the other cover; the fine metallic dust remaining in the cover may be thrown away. Repeat this process until the alloy is clean, possibly four or five times. Now pass a magnet (a twenty-five cent magnet) through the filings, clean off the adhering particles of steel and repeat until none gather on the magnet.

Freshly cut alloys set too quickly for ordinary usage, even though an excess of mercury be added in making the mix, consequently they must be tempered or oxidized.

There are two approved methods of oxidizing alloys. The slow method, which many consider the better, consists in placing the filings in a shallow plate or dish and exposing to the air and sunlight for a few weeks, shaking the dish occasionally to expose all the filings, then bottle and set aside for future use.

The other method is called "heat ageing." The filings are placed in a water tight bottle which is placed in boiling water and allowed to remain therein about two minutes for each ounce of alloy to be tempered.

The filings are ready for use as soon as cold.

The simple processes given above apply in making melts from any formula.

Hand Training in Dentistry.

By B. D. Rivers, of the Freshman Class.

Read before the Students' Dental Club of Louisville College of Dentistry.

To minds that are versed in the young and growing volumes of dental literature, and that are not strangers to the chastening hand of experience through the years of a varied practice, many subjects of interest

suggest themselves and grow; but to one fresh from the scented fields of other labor, and steeped to a certain extent with the peculiarities and idiosyncracies of that particular department, making his maiden effort in this new rôle, there is an aching void within and a strong impression of the unfitness of things.

I trust, however, I shall not ask without interest to you, your attention to the subject of "Hand Training in Dentistry." Why should not a subject be interesting to us that treats of a member, when perfect, most striking in its beauty, and when trained and properly employed, a marvel of usefulness? The hand has been the study and subject of unparalleled admiration of painters and sculptors for ages past. To imitate its perfection of beauty and grace of outline has been the unattained ambition of many, while the more gifted have rejoiced in the realization of a glorious ideal. But were beauty its most favored attribute, it could not be the subject of our theme.

Utility plays the part of which we always love to speak. By means of the hand Raphael and Michael Angelo were enabled to materialize their superb conceptions and give to posterity productions that through the ages will serve to inspire to nobler and higher thoughts.

Sculpture, in all its Grecian beauty, would never have delighted the world had not the gentle touch of this docile member been brought under the control of the soul, and translated the inspirations of the genius into delightful material existence. The musically trained hand snatches from the stringed instrument dulcet strains that do witch away our senses. By a mere move of this member words and sentences may be made forcible that are otherwise tame.

While all this is beautifully true, we are further forcibly impressed with the fact that complete mastery over it is necessary for the graceful performance of these parts. The trained hand which is so necessary and indispensable in art and music is of no less importance in dentistry and to us as dentists. In the first place, the delicacy of the work requires it; the adjusting of a band or crown, taking an impression, or the excavation of a cavity leaves no room for a clumsy hand or a bungling movement. These things must be touched lightly and rightly, a function which an untrained hand cannot perform. There is no other work, perhaps, in which this element of delicacy is so striking. The watchmaker might say his art of manipulating hairsprings and most perfectly adjusted wheels is more delicate, but remember he has to do with inanimate objects, while the dentist deals, along with other things, with a personality.

But again, celerity and efficiency are absolutely necessary for the coveted success. The hand trained to do readily the bidding of the mind is what the dentist needs. It is necessary for the patient's benefit as well

as the operator's as regards time, for in these stirring, moving, busy years of this closing century the old adage that "Time is money" is more than ever true. It is often the case that rapid work is less painful, and for that reason a great consideration to the patient. Efficiency comes through careful and studied training of the member to be employed, and the dentist will always sustain himself who has trained his hands to act carefully and well their part.

The hand serves for the organ of speech in the dumb and the special sense of sight in the blind, and while a dentist may have both of these organs well developed, yet there are many times when he, at least, has to use the sense of touch for sight. The excavation and filling of approximal cavities on distal surfaces, and preparing and filling root canals require operation without the full aid of the sight, and must be accomplished through the delicate sense of touch. The statement has been made by one high and justly honored in the profession, that one who does not possess this delicate sense of touch or that element from which it may be cultivated, would act wisely in directing his efforts in other channels, for he can never expect to succeed in the profession of dentistry. We who are hopefully looking forth to the future for everything, and will anxiously listen for the plaudit "Well done," should look well, before going any further, to our present possessions in this line. It is an alarming fact that about four out of every ten who take up dentistry make a failure, and may it not be that this is no mean index as to whether or not we belong to the fated four?

But again, the careful training of the hand is important and necessary, as it shapes out our ideals. When a piece of work presents itself, let it be what it may, the extraction of a tooth, treating a root canal, putting in a contoured gold filling, adjusting a bridge or a case of regulating, to the trained mind the ideal way of executing it presents itself, and then upon the hand rests the responsibility of materializing this mind picture of what should be done. When the ideal is perfect and this ideal has been approximated in execution, we have what seems to me would delight the heart of an earnest and faithful dentist—a successful piece of work.

High Preliminary Training Advantageous.

In the last place let us suggest some methods of training whereby we may get possession of this essential. To my mind there is nothing that prepares a man better for the work of a dentist than a broad literary education. There has been an idea prevalent and apparent to the classes in general that if a man were expecting to study dentistry it was not necessary for him to complete a college course. I am sure, however, that it gives the profession pleasure to note the happy symptom that is showing itself in an increasing literary requirement by

our colleges. We find, if we notice, that the leading men in the profession in the United States are well educated. Go to the large cities, and in the majority of cases we find the men who have the largest and most lucrative practice, are men who have laid a broad foundation. And so it is throughout the country. It is exactly as we should expect it, for a trained mind can grasp ideas more readily and more easily, and the ideals formed are more perfect and of higher order. In this way the work of the hand can be improved, for the hand cannot execute what the mind has not conceived.

With a mind large and broad enough to see something beyond the bounds of his own profession, and a hand trained to execute the ideals of the mind such as a preliminary course in training would give, a man is infinitely better prepared to begin his professional training.

This naturally brings us to the discussions of the means employed for hand training in our college laboratories. This, of course, would include technics and preliminary prosthetics. I shall not attempt a discussion of these subjects, as they furnish material for many papers. I shall only call attention to a few points.

The greatest value of technics lies in the fact that it trains the hand to do. Many of us, however, as weary freshmen, may not have appreciated this value in the last days of April and the warm and lengthening days of May. Tooth carving, cleansing and filling root canals, placing fillings and restoring contours, making tooth sections, stamping and especially drawing them, admirably bring into play most of the powers to be exercised in actual work.

While the prosthetic training given is of direct value in practical work, and possesses less of the hand-training element, perhaps, than does technics, yet the hand is trained to do what could never be learned by looking on, and for that reason is a strong factor.

And now, in conclusion, I would say let us have the trained hand in art that the representation of the beautiful and the grand may be created; let us have the trained hand in music to set free the imprisoned harmonics that wait to delight the souls of men; let us have the trained hand in dentistry that the grandest possibilities of the profession may be accomplished.

Some Minutiæ of Dental Practice.

By L. G. Le Roy, D.D.S., New York, N. Y.

Read before the Central Dental Association of Northern New Jersey, October, 1899.

Your essayist was prompted to treat this subject and apply the term "minutæ of practice" by the manifest necessity for ascertaining some cause for the failure of fillings and possibly to contribute a mite toward the solution of the problem.

So many factors conspire to break down our self-sacrificing accomplishments—and those of the other fellows—that when we note failure, an attempt should be made to solve the problem, for, as Dr. Johnson said, "it is generally conceded that we are not yet able to prevent decay. It thus becomes imperative that we study the best means of checking and controlling it."

Office and Personal Sterilization.

Cleanly environment is a fundamental principle. This applies in general, but in particular and positively to the operating room. The washing of the hands, cleansing of the nails and surrounding cuticle, after which dipping the finger ends in a sterilizing solution before touching a patient's mouth, and the same procedure afterward for one's own safety, are imperative.

It is a simple matter to cause irritation to the most vital assistants, the eyes, by conveying to them an irritant, particularly at the end of a trying day's work, when they are in the most susceptible condition. Unconsciously we rub fingers into them. Another practice should be cultivated—that of using a handkerchief in touching the skin. And the operator should be careful of his own mouth and person and clothing.

An important consideration is the sterilizing apparatus. Of course, every practitioner uses one now for the proper care of his instruments, impression trays, forceps, etc. It is generally conceded that boiling or superheating with a germicide accomplishes thorough sterilization. The

process should include the immersion of the entire instrument in the steam chamber. The saliva ejector, of all instruments, should receive this attention. The old-time cuspidor (spit box) should be treated to a boil daily, but it is safe to say that most of those in use do not receive that consideration.

Many centuries passed before the anatomy and physiology of the teeth were promulgated, and they are not too well understood today.

Not until we become thoroughly acquainted with the histology of these organs and also have a perfect understanding of the physical properties of filling materials will we be able to conserve them.

Why and How Pain Should Be Avoided.

In the preparation of cavities for filling, we should strive to create the minimum amount of pain, and not alone for the comfort of the patient. Pain is indicative of irritation and an evidence of impaired function. When acute, through the application of an instrument or other agent, nature's impulse is to extravisate reparative tissue to the impaired part. Temporary congestion ensues in the case of irritated dentinal tubule contents, and increased circulation of blood plasma results. This plasma is an undesirable quantity in contact with the filling material.

To retain the tooth in the least irritated condition medication may be resorted to, but this paper is concerned principally with the mechanical treatment of the teeth, so a mere reference to obtundants will suffice. The chisels, excavators, burs, etc., for preparing cavities should be kept as sharp as dexterity can make them.

It is false economy and barbarous to use dull burs, for they perform the work required so imperfectly that if there were no more serious objection that would be sufficient, but the injury to practice by being termed brutal is serious as well; and the considerable loss of time in preparing cavities with dull burs more than discounts the price of sharp instruments.

True cutting of a bur is not augmented by pressure, even while cutting enamel. A crushing or pulverization of the tooth structure ensues, which may prove an element in the subsequent failure of the operation.

Because a sharp bur will not penetrate enamel quickly is not a good reason why force should be exerted; a revolving instrument, especially when enlarging a cavity, acts as a wedge, and with the pressure is liable to cause fracture of the enamel. Especially is this true in the fissure of a bicuspid weakened by caries.

The tooth may ultimately return with a broken cusp, fractured as far

as the gingival border. This character of accident is cited because of its seriousness and frequency. Burs should receive at least the same sterilizing attention as other instruments, for their peculiar shaped heads so readily retain carious or putrescent matter that it seems reasonable to suppose that infection of healthy tooth structure may occur by inoculation through the weeping ends of severed dentinal tubuli. For this particular reason the smaller, less carious cavities, should be sterilized as well as larger ones.

Care Required in Preparing Cavities.

Cavity margins are presumed always to receive their quota of attention, but there is one vulnerable point which at times escapes. Possibly my reference can be conveyed in three words—the least accessible part of a cavity. These margins are liable not to receive the same attention as the portions which are more accessible; the carious material may not be as positively removed; the retaining point may be left weak, and the filling lack density or even be plugged not in accordance with the requirements of the case, in consequence of which is wrought a chain with a weak link.

Time and labor expended in attaining the standard of approved cavity preparation are well spent. The application of rubber dam at some time before the sterilization of cavities is imperative. The interdental spaces in nearly all mouths show deposits of slimy or calculary character then which were not discernible before. They should be freed of such substances by use of the scaler and finest grit tapes, otherwise the plugger is liable to carry these adhesions before it while filling approximal cavities, and thus failure of the filling is invited.

The sterilization of all cavities is so necessary that a glass stoppered bottle containing the proper solution should be ever handy, and treatment should invariably precede the filling material. This too acts as a wash in removing the dust from the burring, etc., which simple air blasting will not do. The idea seems prevalent that a cavity is in proper condition for filling when simply dried, even though sterilized.

This may suffice in some cases, such as Dr. Black's "immunities," but those cases are not common, so to attain positive results the dentine should be desiccated. Next, the several ends of the severed canaliculi should be sealed with extremely thin varnish, which will prevent the return of moisture to the cavity surface in contact with the filling, particularly those of phosphate and of amalgam. In the one the acid of crystallization may become a free acid and cause decalcification of dentine and consequent necessity for early refilling of the cavity, if not possible death

of the pulp. In the latter, oxidization may occur and shorten the life of the filling. Not a vestige of varnish should cover the enamel margins.

Management of Gold Filling Material.

Next in importance to the correct preparation of the cavity is that of inserting the proper filling and getting it to stay. With this new era of porcelain this seems more true than ever. Too much care cannot be exercised in the selection of instruments suited for the proper manipulation of the materials to be used, particularly the various forms of gold, which is the most sensitive material with which we have to deal.

The utmost care should be exercised in its preparation for the cavity. The fingers should never touch it during any stage of the operation, as annealing, even through a flame, will not eliminate entirely adhesions from the skin, oily or otherwise. The high heat will carbonize those particles, and the carbon remain as a barrier to cohesion.

Annealing gold is an art in itself. Your essayist has failed to procure as good results by passing it through the flame as by the use of a mica sheet, which eliminates the principal element of contamination—the flame; neither gas nor alcohol are exempt from impurities. The gold box, wherein pellets or their equivalent are kept from one operation to another, is generally a receptacle for particles of dust, etc. Its soft base of chamois or something else makes a beautiful nest for their retention.

Of course we do not wittingly incorporate this impurity, and some day a plan will be adopted to protect the gold box from such foreign substances. The dropping of gold from the plugger onto new dam which still has its surface covered with powdered soapstone, or upon any other contaminating agent, is liable to make adhere to its surface something that will not admit of perfect cohesion. Gold of different degrees of cohesiveness or of different bulk should not be used promiscuously, because of the varying force required to condense varying thicknesses or differently annealed portions. This is true while using the automatically operated (fixed blow) mallets where the change of blow cannot be regulated instantly.

An unevenly condensed filling is productive of flaking, which becomes particularly evident in contour work. The tendency in malleting is toward too heavy or too long application of power. Many failures result apparently from an endeavor to condense gold too much against enamel margins, crushing them; this with either the mallet or burnisher.

Humidity of the atmosphere is a condition not universally regarded as influencing an operation for good or bad, but it exerts such marked

modification upon the cohesiveness of gold that it should be guarded against as far as possible. Even the breath from patients' nostrils is sufficient to destroy its property. Gold should really be kept warm during an entire operation. The electric annealer accomplishes this quite perfectly.

Amalgam.

Amalgam has much to recommend it as a tooth conserver, but it, too, is abused, though used more than any other one material. The first treatment a quantity of alloy should receive at our hands is the passage of a clean magnet through the filings. Generally less care is bestowed upon cavities about to receive this filling; they are more hastily shaped and frequently not protected from moisture, even by the use of a doily.

Sterilization is not deemed necessary, nor sealing of the dentinal tubuli resorted to as a protector. Possibly the most attention is applied to the preparing of the amalgam. This may be done properly, but there is some diversity of opinion in reference to the removal of oxides and other impurities if the amalgam has been prepared in the hand.

To do this best seems to be by "washing," and there are reasons for so doing. Particularly because it removes the metallic oxides which occur in the alloy. These do not amalgamate, but are simply retained throughout or on the mass, pulverized, and act as a barrier to homogeniety. Mercury has no affinity for the oxides, and they seem to be as positively an impurity as iron rust would if incorporated. It is generally agreed that aged alloys have virtues over new, and that alloys oxidize in so aging, but when the mercury becomes incorporated the metal is freed by maceration, and we find the oxide mainly on the surface of the mass. It seems inconsistent not to heed this oxide but to fracture the mix into bits and work into the cavity any way. If sufficient of it be present it will prevent cohesion of two portions when brought together; how then can it act beneficially in the tooth cavity?

A word in reference to the particular care which should be exercised in finishing *all* fillings, to complete properly at all *margins*, especially where the tooth is irregular in form and where the filling conforms to sulci on the grinding surface.

Second District Dental Society.

October Meeting.

The October meeting of the Second District Society was held at Newburg. Dr. Barker read a brief paper which appears in this issue as does also a paper read by Dr. Houghton, which elicited the following discussion:

Dr. D. W. Barker. There are but two suggestions that I can offer: First, if the thymol paste is made in a quantity of say four drams as the formula requires a large proportion is wasted because it soon hardens, and though it may be softened with glycerine, it is a crumbly mass and unfit for use. A better way is to obtain the ingredients (thymol, glycerine, dried alum and oxide of zinc) separately and mix a small quantity as needed. Second, do not try to push the paste into a canal by cotton-shod broaches or any other instrument. The easiest and also the most thorough way is to place in the pulp chamber a pellet of the paste, then rub it into the canals with a pellet of cotton held in the pliers. If one will take an extracted tooth, clean out the canals and try the experiment of rubbing the paste into the canals with cotton pellets, he will be surprised how quickly the paste will be carried through the canals.

Dr. A. H. Brockway. In commending Dr. Houghton's interesting paper on the use of mummifying paste in the treatment of teeth with exposed pulps, I wish to add my testimony as to the value of the practice described.

I have made use of this method quite generally for more than three years, and with increasing confidence. I do not recall a single case where it has proved unsatisfactory either to myself or my patient. That the work involved is much less tedious to both, goes without saying, since usually not more than two short visits, at the most, are required to accomplish equally good, if not better, results than were formerly se-

cured by repeated and tedious sittings when it was deemed essential to remove every shred of pulp tissue from even the most minute root canals, and afterwards to fill them with various solid substances from gold to gutta percha.

Surely the lot of the dentist is a more happy one, so far as the treatment of pulp cases is concerned, than it formerly was! Now, when a case presents where the pulp is nearly or even slightly exposed, if uninflamed, it can be successfully treated and preserved with the iodoformagen cement. Should it be deemed advisable to destroy the pulp—and this is often the wisest course, especially in adult teeth—this can be done painlessly by the proper application of arsenic; then after the removal of so much of the lifeless tissue as can readily be done, fill the pulp chamber with the mummifying paste and complete the operation.

Should the case be one involving a dead and putrescent pulp, there is, in my experience, no treatment so simple and efficacious as that described by Dr. Schreier with the use of kalium natrium at first, followed, if necessary, by such cleaning, disinfecting and treatment as may be needed to put the root in a thoroughly aseptic condition.

The dental profession, and the public not less, are to be congratulated on the great advance which has quite recently been made in this feature of dental practice.

Dr. W. J. Turner. The record Dr. Houghton has presented is a most attractive one. One hundred per cent of successes is perfection, and that is what we are all striving for. However, the future may show that some of these apparent successes may fall short of that ideal and abscesses may develop. We know this happens after our most careful and approved methods of root filling, and then our peace of mind is proportional to the ease of removal of the particular kind of root filling employed. Dr. Houghton mentions having had several opportunities of examining the condition of the root canals after his method of treatment, and in each instance has found them empty, exactly as we would wish them to be for the easy treatment of alveolar abscess. I believe there are but few who deal with many cases of pulpless teeth who can show such an unbroken line of successes with them, and when we add to this the very favorable condition of the root canal for further treatment, should this ever be necessary, it would seem that this is the best method yet given to us.

Dr. W. Andre Campbell Dr. Herbst by his method also claimed a perfect immunity from future trouble, and possibly it is not owing so much to the properties contained in Dr. Houghton's mummifying paste that makes it appear so successful

as the method applied for devitalizing the pulp, as both used arsenic, and both filled the tooth before a septic condition could possibly interfere.

Dr. E. T. Rippier. I have treated several cases after the manner described in the paper, to wit: after first devitalizing pulp I removed same from chamber, enlarged chamber and applied the mummifying paste, covered with a disc of asbestos paper and filled. The above applies to all cases I have treated, and they are so far successful.

Dr. F. P. Hamlet. A paper treating on the most important thing which we do in dental therapeutics should be welcomed, and especially should *this* paper be applauded for its convincing conclusions. The mummification of the pulp, or the mummification of matter remaining in a tooth, after the removal of the pulp, is not an impossibility, as we have learned by Dr. Houghton's report of over three hundred cases treated by him.

My experience in the use of this paste covers almost three years—using it (not exclusively) with some precaution. Firstly, the devitalized pulp should be removed as soon as possible, for if allowed to remain long the albumen and other life functions of the tooth will become diseased by the presence of the decomposed or decomposing pulp.

Secondly, if there should be any inflammation, due to the action of the arsenious paste, wash thoroughly with bicarbonate of soda to neutralize the action of the arsenic and medicate to allay or "scatter" the inflammation before attempting to apply the "mummifying paste." It is quite unnecessary to remove all of the pulp. Do not be surprised to find tenderness and perhaps pain after filling the tooth in this manner, as the contracting effect of the alum on the remaining pulp and other organic matter will thus be indicated. Finally the pain and soreness will go and no evil results follow.

J. Foster Flagg. The Secretary read the following interesting letter from Dr. J. Foster Flagg:

DEAR DOCTOR:—As usual the reception of your kind remembrance from our "Second District" renews the duplex feeling of regret that my society days are over, and the satisfaction that my interest in the work is undiminished, and that I am yet provided with a "long range" gun! The fact that "badly decayed roots" are crowned is indicative of the changes which operative dentistry has made during the last twenty-five or thirty years, for prior to the sixties there was but very seldom "crowning of badly decayed roots," while now there are not only frequent attempts in this line, but very many ways of doing it.

This shows that the efforts have not only not been altogether unsuc-

cessful, but that they have been sufficiently satisfactory to induce many trials by various methods. This is encouraging.

I shall await with much interest the publication of friend Houghton's paper on Mummification of Pulps for two reasons. First, it seems so sensible to wait for "four years" rather than to give the usual experiences of "several months" which are spread before dentistry, and second, because pulp mummification has been an ideal aim of dental therapeutics for almost half a century.

The first attempts at this were made with creosote and almost every canal filling then made, always with gold, was preceded with a tiny pellet of natural cotton (absorbent cotton was then not known), saturated with this universally used medicament.

The object of this was to prevent, as far as possible, the putrescence of any remaining portion of dental pulp, which was, practically, "mummifying" it thus much.

I have removed many hundreds of these tiny pellets of cotton, and it was the relief which so usually and so quickly followed their removal, together with the perfect structural condition of the cotton, as shown by microscopic examination, that induced me to begin that increase in quantity of cotton, that it might be sooner reached in like cases of need, which eventuated in the almost entire filling of canals with taper twists of medicated cotton, a practice which I have followed for thirty-five years without having any reason for changing it, but, on the contrary, with plenty of demonstration to warrant the advisability of teaching it.

But with this the additional teaching of the filling of canals, especially the finer ones, and those most difficult of entrance, with "inspissated canal paste" made in the "sixties," with creosote and oil of cloves, equal parts, thickened with acetate of morphia; in the "seventies" with "oily carbolic acid" and oil of cloves and acetate of morphia, to which was added, for a time, salicylic acid, but which was soon abandoned for sulphite of lime which, so far as I know, has been retained until now.

The "inspissated canal paste" of

℞ Acetate of morphia, qr. x.
Sulphite of lime, qr. x.
Fluid cosmoline, q. s., to make thick paste,

with its addition, occasionally, of a crystal of menthol, seems to have been the accepted paste for the eighties and nineties, as given in Inglis's Quiz Book, but I have never had reason to regard the fluid cosmoline as any better than the mixed "oily carbolic acid" and oil of cloves. My formula is that which I have used for more than twenty years and have referred to as that of the "seventies."

℞ Oily carb. acid
Oil of cloves. áa.
add
Sulphite of lime áá
Acetate of morphia.
Sufficient to make thick paste.

To this, in specially indicated cases, I add a small portion of Fluo-silicate of sodium as an additional conserver.

All this work is directed to the "mummifying" of remaining portions of pulp tissue, but as I understand it the "mummification" of the present day refers to that of the entire pulp.

That there is any advantage in mummifying the bulbous portion of pulps, I fail to see, for all the difficulties of pulp work seem to me to be confined to the canal portion of the work, but that the successful mummification of these parts of pulps would be a most desirable practice is unquestionably true, as by such results practically all the difficulties and dangers attendant upon pulp cavity work would be obviated.

With kind regards and kind wishes for my fellow members as well as yourself, I remain, sincerely your friend. J. FOSTER FLAGG.

Central Dental Association of Northern New Jersey.

October Meeting.

A meeting of the Central Dental Association of Northern New Jersey was held at the parlors of S. Davis, Newark, N. J., on Monday evening, October 16, 1899.

Dr. Charles A. Meeker presented a communication from Dr. Dowsley, of Boston, Mass., concerning the International Tooth Crown Company litigation, asking members of the Protective Association who had not paid the $10 dues to do so at once and requesting dentists who were not members to join at once.

Dr. Ottolengui stated that only those who were members of the Protective Association would be protected, and that the $10 fee for members and the $20 fee from those desiring to join must be sent in by December 1; also that it would be too late for one to join after suit was commenced. Dr. L. C. Le Roy read a paper entitled "Some Minutiæ of Dental Practice."

Discussion.

Dr. G. Lenox Curtis. While I am not engaged as a practicing dentist, I appreciate the paper very much, and like the ideas of the essayist as to certain practices.

The importance attached to the sterilization of instruments and hands seems to be almost overlooked by a great many practitioners. My attention of late has been called to several surgical cases which I attribute to neglect on the part of dentists to sterilize their instruments. In two instances cancers followed the extraction of teeth by instruments which had not been sterilized and upon one of which blood was seen by the patient.

The probabilities are that not one in a dozen dentists has sterilizing conveniences in his office. A few years ago I visited the office of Dr. Sailor, who is here tonight; he was busily engaged in making a sterilizing apparatus, the sterilization being done by heat, as I recall it, instead of water, and with our new electrical appliances I see no reason why such a device could not be put in the office of most dentists.

I regard this subject from a surgical standpoint, and would urge dentists to give more attention to it. When they will do so they will do themselves and their patients more credit.

Dr. Ottolengui. I should like to ask Dr. Curtis a question. I will start by saying that I am not arguing against the sterilization of instruments, because, at the least, it obtains cleanliness, and we cannot be too clean. We hear a great deal of the danger due to not sterilizing instruments, yet we hear very little about infection that occurs from not doing so.

I was quite interested to hear that Dr. Curtis had found some cases which he could attribute to lack of care in the treatment of the dentist's instruments, but I was a little surprised when he stated that the disease transmitted was cancer, because I am not aware that it has yet been proved that cancer is inoculable. I did not know that the germ of cancer has been isolated, nor that authentic cases of cancer by infection had been recorded, and I will ask Dr. Curtis to give us the present status of medical information on the subject of whether or not cancer is, strictly speaking, a germ disease, which can be carried from one person to another through instruments.

Dr. Curtis. I believe it is, and I think those who have experimented directly in the line of cancer will bear me out in this opinion.

In Vienna, in 1890, I saw this matter demonstrated to my satisfaction. It was a case where a piece of carcinoma was placed under the skin

of a rabbit, and in about two months I had an opportunity of seeing the growth of the disease—the rabbit was in every way affected by the carcinoma.

In the study of blood, the action of the cancer poison is as plain to be seen as anything that can be demonstrated. The action is upon the blood cells.

The subject of the blood has been much written upon; much is still to be said, and will in the near future, I hope, attract the attention of the journals.

A case in my practice will perhaps demonstrate the importance of sterilization. A patient came to me with epithelomia involving the entire right maxilla. The history of the case was that about six months prior to that he had occasion to have a loose tooth extracted. When the dentist picked up the instrument the patient saw it was covered with blood, and held out his hand, but before he had a chance to catch the instrument or prevent the dentist from putting it into his mouth, it was slipped in and the tooth out. About two weeks afterward he found a soreness in his mouth, and from that day the growth of the cancer was noticeable, until he lost the jaw in consequence of this dirty work.

I am told tonight by a gentleman here that a few weeks ago one of his patients was in the country, and it was necessary to have some dental work done. The dentist urged her to have a wisdom tooth extracted. She did so. He used a hypodermic injection, presumably an unsterilized needle, and she came back with blood poisoning, and is now in a dying condition.

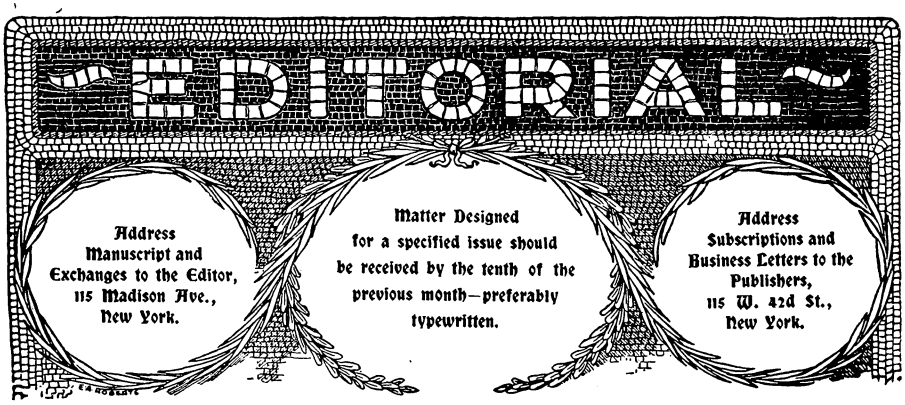
Dr. Ottolengui. I wish to continue this subject, because I would like to get it straight. It does not seem to me that Dr. Curtis's answer is convincing. In the first place, the case reported from abroad I would hardly consider a case of infection, or even of inoculation, because, according to his report, a portion of a cancer was introduced into the anatomy of a rabbit. That it seems to me was a literal transplanting and is hardly to be likened to a transmission by instrumentation. Secondly, the record of the supposed case of transmission from the dentist's hands seems to be incomplete. We have the history simply of a patient who had a tooth extracted, who noticed that the instrument used had blood upon it; but we do not have a record of the patient from whom that blood, which was on the instrument, was taken. It is not proven, therefore, that that blood contained any cancer germ, if there is such a thing as a cancer germ, nor that it was used in a mouth where a cancer was. Furthermore, as there was no examination of this patient's mouth in advance of the cancer, it is not certain that the

cancer, in an incipient form, did not exist in the mouth prior to the introduction of the forceps and the extraction of that tooth. Consequently, I maintain, unless some other data can be given, that case does not prove that cancer was transmitted by an instrument used in one mouth and then put in another.

Dr. Curtis. As there was no history of disease previous to the extraction of the teeth, the inference is that the patient was inoculated at that time. If Dr. Ottolengui would look up the medical literature of the fall of 1895 and the early part of 1896, he would find it almost literally filled with reports on cancers. The subject was taken up then and discussed for nearly a year, and to my knowledge fifty cases of cancers of that kind were reported, and it was generally accepted that cancer was an infectious disease.

As Dr. Ottolengui says, the germ of the disease has not (to my knowledge) yet been isolated.

Dr. Charles A. Meeker. I do not feel competent to discuss the subject that Dr. Curtis has talked about, but I have been in the habit of using an antiseptic both on my instruments and on my hands, and I have pretty well run through the entire gamut of antiseptics. For the last two years I have been using formaldehyde, of about 40 per cent. It makes a very cheap antiseptic for the teeth and hands, as it only costs about forty cents a pound, and a pound will last about a year.



The Close of Volume Twenty-one.

With this number closes the twenty-first volume of this magazine and the third in its new guise. That the new policy has been a success is attested by the steady growth of our subscription list, our foreign readers at present more than equalling the entire circulation of many dental journals.

The dental profession has always asked for an independent journal, and from a professional standpoint, ITEMS OF INTEREST is entirely independent, no trade connection influencing the insertion or exclusion of a single line from its scientific pages. We have aimed to be independent in another sense of that word; that is we have sought to operate the magazine in the interest of the whole profession rather than to allow our friendships or our prejudices to warp our judgment with the result of making ITEMS OF INTEREST the organ of any clique or locality. For a time our advocacy of higher standards in dental education perhaps made some believe that we were prejudiced in favor of examining boards, but that notion has probably been dismissed since we published an *exposé* of some of the peculiar methods of certain boards, and in this connection it may be stated that we are at present investigating very serious charges against another board with a view to pointing out the necessity of keeping the dental license system free from politics.

At this time last year we pointed with pride to the number and importance of the original matter which had been especially prepared for us, and it must be as gratifying to our readers as to the publishers to note that we have done even better this year.

We have presented in our department of Exclusive Contributions 54 papers; in our new department of Prosthodontia 24; Incidents of Office Practice 8; Office and Laboratory 5; Orthodontia 2; Book Reviews 10, a gross total of 103. In addition to the above we presented 28 papers which had been read and discussed before prominent dental societies, and a number of articles from European and domestic current literature. In the present volume 147 authors have contributed, while 65 have taken part in the discussions. The text has been embellished with 269 illustrations, a liberal number of which were expensive wood cuts. The volume has been produced at a considerable increase in cost over previous years, but there has been no increase in the very low subscription price, nor will there be any change for next year.

Two important achievements during the year may be mentioned. As a midsummer number we presented our readers with a magazine of 88 pages, filled with exclusive matter especially prepared for us, all devoted to Prosthodontia, the most practical work of the dentist. These articles were elaborately illustrated and printed on expensive paper, and alone were worth the price of a year's subscription, as several hundred appreciative readers have admitted in complimentary letters to the publishers and to the editor.

Secondly, it was most gratifying to find our efforts to abate the evil of College Infirmaries using the public prints to gain patronage, thus becoming competitors with the regular practitioners, so completely successful. The passage of a rule by the National Association of Dental Faculties, forbidding this class of advertising appears to have ended a practice which was most irritating as well as a blot upon the good name of dentistry.

In bidding our readers a Merry Christmas and a Happy New Year we will add as a delicate hint that ITEMS OF INTEREST for 1900 will be *fin de siecle.*

THE EDITOR'S CORNER

With malice toward none, with charity for all

Questions will be answered in this department, provided the answers would be of general interest. After publication our readers are cordially invited to make further reply, criticism or comment.

Comic Dental Journalism.

In the effort to increase their subscription list some magazines offer to furnish one or more periodicals together with their own at a reduced price. In this manner some dentists procure reading matter for their waiting room table.

Those who would like to have the comic element added to their regular dental magazine, need not ask for club rates, including *Puck* or *Judge*. It will only be needful to subscribe for the *Indiana Dental Journal,* the editor of which treats his readers to good humorous matter in each issue. Indeed, were the other pages of this young magazine as well written and as entertaining as the editorials, there is little doubt that the list of subscribers would increase with great rapidity.

Each month it is a pleasure to turn to the editorial pages with a feeling of assurance that some witty bit of humor will meet the eye, but in the November issue the comic editor surpassed himself, one of his best jokes being apparently unconsciously evolved, while a second joke is—on himself.

Under the head of "Pressure Anæsthesia," we are told that in October, '98, the *Indiana Dental Journal* republished a clipping from the *Dominion Dental Journal,* describing a method of cocainizing a pulp by pressure, using cocaine and alcohol. Next the *Indiana Dental Journal* editorially advised using chloroform instead of alcohol. Then follows this:

"ITEMS OF INTEREST finally found out about the method in May and June, 1899, eight months later, and the October (1899) issue of the *Stomatologist* has now discovered it."

The moral of this little fable is that one should subscribe to the *Indiana Dental Journal,* and that is where the joke comes in. Why should any one do that? The intended idea evidently is that one would in this manner get the new ideas hot from the griddle as it were. Yet the editor naively admits that in the first instance his news (?) was clipped from the *Dominion Dental Journal,* so that the rational plan of the man in a hurry for fresh methods, would be to subscribe to the *Dominion Dental Journal,* rather than to the one which the comic editor is trying to boom. But if we carry this analysis a little further we get down to the milk in the cocoanut, and find the real and only true moral to the tale.

The *Indiana Dental Journal* first shed its luminous rays upon the intellectual minds of a long and patiently waiting dental world somewhere about the beginning of 1898. If the editor will turn to pages 717-18 of ITEMS OF INTEREST for 1897, he will find the first account of Pressure Anæsthesia which occurs in dental literature. What we published in 1899 (a method by the way radically different from both of those mentioned, in that ether was utilized, its expansive quality being an essential factor) was merely printed as an interesting bit of evidence that Dr. Morton's suggestion had been adopted by the profession. So that the moral of the little parable in the *Indiana Dental Journal* indicates that one must subscribe—and read—ITEMS OF INTEREST to be in the front ranks of progress.

The other joke relates to poetry. In a really very clever and witty tirade the editor of the *Indiana Dental Journal* scores Dr. H. B. Catching for having written some "po'try," some of the lines of which contained six feet, while others were at least "nine feet six inches" long. Next he republishes the following lines which he says where written by "Oriole" an anonymous writer in the *Digest*:

"Vice is a monster of so frightful mien,
As to be hated needs but to be seen;
Yet seen too oft, familiar with her face
We first endure, then pity, then embrace."

Of this stanza he says: "Oriole's 'pome' may not be as bad as Brother Catching's, but in a finish fight for the Homeric belt neither of them could give the other three pounds' weight. It's an even bet that neither of them

would poll sixteen votes for the office of Poet Laureate in their home counties, unless they lived in the same county that contained the Home for Feeble-Minded. Both of them wield facile pens and are strong, bold thinkers in prose, but their poetry is the worst ever. Some one ought to start an Anti-Poetry Vaccination Society before the editors of ITEMS and the *Register* get the disease."

Will the gentle zephyrs that disturb the passage of sound waves in Indiana cease their play, and will the readers of ITEMS OF INTEREST place their fingers in their ears, for one moment of time, while we whisper to our brother editor, that the "pome" attributed to "Oriole," which he considers so poor from the "Homeric belt" viewpoint, is commonly supposed to have been first penned by one Alexander Pope, a poet of some local renown, long dead and perhaps forgotten by some (In Indiana)? The lines occur in a brief effort in rhyme entitled "Essay on Man." (Ep. II, Line 217.)

It may also please our friend to hear that the editor of this magazine will not drop into "po'try," though the temptation to write something ending with "Brother Hunt," coupling it with a line terminating with "another stunt," would be great, but for the fact that slang is so undignified.

Rhymes of the States.

About two years ago we noticed in our department of "reviews" a book entitled "Rhymes of the States," an exceedingly unique and interesting little volume, in which by the way it was proven that even though some dentists may not be able to rhyme, others have the gift. This book is from the pen of our well known *confrere,* Dr. Garrett Newkirk. It is a scheme by which a child may readily learn the geography and some of the history of all the States in the Union. There is an outline map of each State, together with an object which it resembles, accompaned by a picture of some principal product. Besides the beautiful pictorial aids to memory there are verses relating to each State which recite the chief facts of its history and geography. The whole is beautifully bound in the form of a gift book, and it is suggested here that it would be a fitting remembrance of Dr. Newkirk if his brother dentists would ask for his book when purchasing presents for Christmas time.

Ground Porcelain Inlays.

The following method of making ground porcelain inlays is furnished by Dr. George H. Hunter, of Dayton, Ohio:

"To make perfect fitting ground porcelain inlay fillings, prepare the cavity in the usual way for inlay fillings, leaving no undercuts; dry the cavity thoroughly and wipe out with vaseline; take a plaster impression of the cavity; place an elastic band

around the impression and pour Melott's metal; separate, and we have a reproduction of the tooth with cavity.

"Now select a piece of porcelain to shade of tooth and grind to fit on the principle of the Japanese carved wooden dentures to fit models.

"Upon trying in the porcelain the metal leaves a black mark showing where to grind. It is possible to get as practical a fit by this method as any other."

Corrosive Action of Strengthening Bars.

Dr. C. A. Palmer, of Grinnell, Iowa, writes as follows: "In using metallic strengthening bars for lower dentures, I find that if any considerable surface be accidentally exposed in finishing, it will produce a corrosive action in the mouth, described by patients as a 'metallic taste and scalded feeling.'"

Quack Infirmary Advertising.

Discussion of the evils of using the daily prints to advertise the infirmaries of our regular colleges, recently published in our pages, did not anywhere consider the possibility that the quack might pose as a college, imitating to some extent the style of the college advertisement, and leaving the discerning public to discriminate. The following advertisement points its own moral:

"FREE DENTAL DISPENSARY.—Work done at this establishment is for the purpose of perfecting skilled dentists in the workings of our absolutely painless process. Those who have practiced dentistry for years come here to receive instruction in a system which is revolutionizing old-style dental work. A method which relieves the dental chair of all dread. To practically demonstrate our process we charge only for material. All work free. Small charge for material. Full set teeth, $2.00; white enamel crowns, $1.00; gold crowns, $3.00; silver plume crowns, $1.00; bridge work, $2.00; silver fillings, 25 cents; gold fillings, 75 cents. Teeth extracted free; teeth cleaned free. Hours—8 to 9. Sundays, 10 to 4. Eastern College of Painless Dentistry. Entrance, 735 Arch street. Over Evans's Drug Store. Take Elevator. Be sure you are in the right place."

Tubercular Infection through Bad Teeth.

Sure as fate is the fact that the older the world grows the more it learns. Not nearly as well known as it should be is the fact that many decaying teeth lodge tubercle bacilli, which eventually pass through the lymph channels to the cervical lymphatic glands, causes these to enlarge, and eventually passing to the pulmonary apices, there to begin the final process of killing the careless patient who lacked the wit (or possibly the money) to have his teeth properly attended to. The evidence is quite satisfactory that some tubercular infections have their origin in this way. The moral is that bad teeth should be looked after, and inasmuch

as teeth may be bad without being noticeable to their owner, a proper mouth inspection by a competent dentist at half yearly intervals is wise, economic and safe.—*Medical Council.*

Care of the Mouth. Two drops of camphor on your toothbrush will give your mouth the freshest, cleanest feeling imaginable, will make your gums rosy and absolutely prevent anything like cold sores or affections of your tongue. The gums, by the way, are barometers of our condition. If they are clear, bright and red we are in good health, while if our blood is thin and wanting in the mysterious red corpuscles that make us healthy the gums will be pale pink, or if we are in a very bad way indeed, and much in need of a course of dialized iron, they will be almost white.—*Indian Lancet.*

The Injuriousness of Artificial Teeth. Dr. Simpson, a Boston physician, evidently does not believe in the Italian proverb, "God gives nuts to those that have no teeth." He maintains that artificial teeth are unhealthful, primarily because they enable elderly people to eat meat and other things not good for those who naturally have no teeth. The teeth, he maintains, fall out at a certain period because nature intended that at this time of life a vegetable diet should prevail. This being so, artificial teeth become a source of danger to the welfare of the organism.—*The Medical Age.*

Disinfection of the Hands with Alcohol. Ahlfeld (*Zeitschrift fur Medicinalbeamte*, Heft 17 and 18, 1899) wonders that surgeons assign so little value to alcohol as a disinfectant. The statement of Mikulicz, that it does not destroy the bacteria in the deeper layers of the skin, he believes to be erroneous. Alcohol having a strength of 96 per cent. is preferable to weaker solutions. Bichloride solution is unnecessary, and other antiseptics, in order to be efficacious, must be used in such strong solutions as to injure the hands. The writer believes that the method of disinfection by scrubbing with soap and hot water and then with alcohol will be preferred in the future by both surgeons and midwives. Moreover, brushes, catheters, intrauterine tubes, etc., can be disinfected in the same way. A 50 per cent. solution of alcohol is useful for disinfecting the external genitals in obstetric practice.

Tjaden (*Zeitschrift f. Geb. u. Gyn.*, Band XXXVIII, Heft 3) believes that alcohol is a good germicide as well as a mechanical cleansing agent. From a large number of bacteriological experiments he infers that 75 and 90 per cent. alcohol has a more powerful bactericidal action than either 50 per cent. or absolute. He recommends Furbinger's method. Over four hundred examinations of the hands of midwives were made after careful disinfection, and in only nine cases were germs absent. More-

over, the women were kept in the clinic for a week at a time, so that they were not exposed to outside sources of infection. The writer's comment on these facts is that it is no wonder that the number of deaths in Germany from puerperal septicemia is about 3,500.—*American Journal of the Medical Sciences, June 1899.*

To Harden Plaster of Paris.

According to the *Medical News* for September 23, a hardening fluid, which will be useful to surgeons for making plaster splints last longer, and also for protecting them against moisture, has been granted a patent in Germany. The liquid may be mixed with the plaster or applied subsequently to the splints. The solution is prepared by dissolving boric acid in warm water and adding thereto sufficient ammonia to form the borate, which remains in the solution. The manner of using the solution is thus described: The saturation of the gypsum or painting of the plaster of paris is carried out in the cold. The objects are subsequently rinsed off and dried. The surface becomes very hard after two days and insoluble in water, while the induration in the interior advances more slowly.—*Cleveland Medical Gazette.*

New Dental Law in Porto Rico.

For the benefit of those contemplating settling in our new possession, Porto Rico, we publish the law promulgated Sept. 30, 1899, a copy of which was kindly furnished by Dr. Rice R. Buchanan, of San Juan:

In view of the fact that the powers and duties formerly possessed by the Subdelegations of Medicine and Surgery and of Pharmacy of Porto Rico have been transferred to the Superior Board of Health, and that the safety of the public may be endangered by incompetent physicians and surgeons, pharmacists, dentists, midwives and practicantes pursuing their avocations, the following orders are issued:

I. That in place of the Subdelegations of Medicine and Surgery, Pharmacy, etc., of Porto Rico, an Examining Committee shall be appointed by the Superior Board of Health, to consist of three graduates in Medicine and Surgery, of not less than ten years standing, and of recognized ability in their professions, two graduates in Pharmacy, and one graduate in Dentistry, possessing the same professional standing. This committee shall be divided into subcommittees, for the work of examination.

II. The Superior Board of Health of Porto Rico will make and adopt for the Examining Committee, all necessary rules and regulations and by-laws, not inconsistent with existing laws and regulations, or with the Constitution of the United States.

III. The said Examining Committee shall meet and organize in the City of San Juan within one month after the appointment of its members is made. The Superior Board of Health shall provide a place for the meetings of the Examining Committee. All the records and papers of all kinds, formerly belonging to the Subdelegation of Medicine and Surgery and to the Subdelegation in Pharmacy, shall be deposited with the Superior Board of Health.

IV. All fees received by the committee shall be turned in to the Treasurerr of the Superior Board of Health. After the payment of legitimate expenses, the balance shall be divided among the members of the committee, in such manner that each member shall receive his proportionate share of the fees received from all the persons he actually examines. The Recorder will receive a proportionate share of all the fees received.

V. At the first meeting, the members shall draw lots for the terms of service. The two persons whose names are first drawn shall serve one year; the two whose names are next drawn shall serve two years, and the two whose names are last drawn shall serve three years. The Superior Board of Health shall, on January 1st of each year, appoint two members, who shall serve three years. A President and a Recorder shall be appointed by the Superior Board of Health on the same date.

Examinations.

VI. The Examining Committee shall hold examinations for those who desire to practice Medicine and Surgery, Pharmacy and Dentistry in Porto Rico, also for Practicantes, Midwives and Professional Nurses at such times as the Superior Board may direct.

VII. All applications under the classes named, desiring licenses to practice their professions or occupations in Porto Rico, shall first present their diplomas, or certificates to the Secretary of the Superior Board of Health, together with a certificate signed by two responsible persons, as to the good moral character of the applicant. If an examination of these papers proves satisfactory, the Secretary will issue a permit to the applicant to appear before the Examining Committee, for examination.

VIII. The questions used shall first be submitted to the Superior Board of Health, and after being approved, the same questions shall be used with all individuals of one class, applying at one time for examination. All examinations shall be in writing and subject to such rules and regulations as the Superior Board of Health shall, from time to time, prescribe.

IX. After each examination, the Examining Committee shall, without unnecessary delay, act upon the same. An official report of such action, signed by the Chairman, Recorder and each member present stating the subject of the examination, average of each candidate in each branch, the general average, and the result of each examination, whether successful or unsuccessful, shall be forwarded to the Superior Board of Health. Said report shall embrace all the examination papers, and questions and answers thereto. All such examination papers shall be kept for reference or inspection for a period of not less than five years.

X. On receiving from the Examining Committee an official report of the result of any examination of any applicant for license, the Superior Board of Health, if it approve the report, shall forthwith issue to each successful applicant, adjudged by the Examining Committee, qualified to practice medicine and surgery, or the other branches named in this Order, a license to practice same in Porto Rico, signed by the members of the Examining Committee who actually examined the applicant, and by the Officers of the Superior Board of Health, and attested by its seal.

Before any license shall be issued by the Superior Board of Health, it shall be recorded in a book to be kept in its office, and the number of the book and the page therein containing such recorded copy shall be noted on the face of said license. Said records shall be open to public inspection, under proper restrictions as to their safe keeping, and in all legal proceedings shall have the same weight as evidence that is given to the conveyance of land.

XI. In case any applicant should fail in his examination before the Examining Board, he may reappear, on approval of the Superior Board, of Health, at any subsequent examination after six months and within two years, without payment of any additional fee.

XII. Applicants who possess diplomas from reputable medical or dental colleges, and who have been licensed by State Boards, *after an examination,* may, upon the payment of the fee of twenty-five ($25) dollars, be licensed by the Superior Board of Health without examination if the Superior Board of Health so decides.

XIII. The fees established by the Superior Board of Health for examinations are as follows:

(a) For examination of physicians and surgeons, dentists, and pharmacists, $25.

(b) For practicantes, $15.

(c) For professional nurses, $10.

(d) For midwives, $5.

These fees shall not be returned in case of failure in examination.

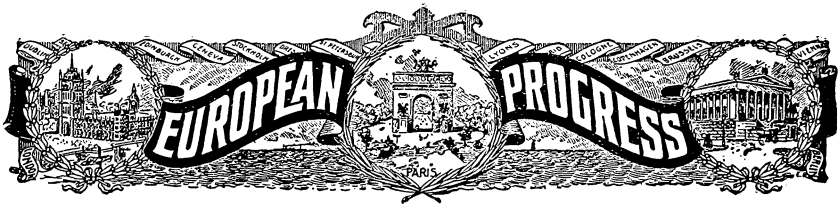
For the issue and registration of a license by the Superior Board of Health, the fee shall be, for a physician and surgeon, dentist or pharmacist, five ($5) dollars, and for all others one dollar. The money received from such fees as well as those mentioned in paragraph XII. shall, after deducting the necessary expenses, be turned into the Insular Treasury.

XIV. No person shall practice medicine and surgery, or the other branches enumerated in this Regulation, in Porto Rico, until the provisions of this Regulation are complied with, except such persons as have secured the right under the Spanish Government. These will receive the license of the Superior Board of Health upon the payment of the fee for the issue and registration of the same. Medical officers, serving in the Army and Navy of the United States, or in the United States Marine Hospital Service, are exempt from the requirements of this paragraph.

XV. For the purpose of advertising the first examinations and for necessary stationery, an appropriation of one hundred ($100) dollars is made.

By command of Brigadier General Davis:

C. H. HEYL,
Major, Inspector General, U. S. A., Acting Adjutant General.



Experiments with Nirvanin.

By Dr. Robert Marcus, Dresden.

In the last publication of the *Wochenschrift* my colleague Rotenberger called the attention of the dental fraternity to a new preparation, nirvanin. As I have had some experience with the article, I take the liberty to give my opinion of the same as far as my experiments will warrant. Trials were made partly in collaboration with a practicing physician, Dr. Krueger, and partly alone. We selected the most difficult cases from among the material that came under our care. A number of extractions were made from persons of varying ages, after the use of nirvanin, with invariably satisfactory results. In two or three per cent of the cases absolute anesthesia was not attained, but a considerable degree of insensibility resulted from the use of nirvanin. This may have been as much our fault as otherwise, resulting from too quickly applying the forceps. We brushed the gums with a *five per cent solution* of nirvanin, or applied tampons saturated, to the gums, which produced the dual effect of anesthesia and antisepsis. According to Professor Einhorn and Dr. Heinz, a one per cent solution of nirvanin is sufficient to perfectly prevent the growth of bacteria. The gums were also injected to the periostium on both sides, the finger gently pressed on the point of injection to prevent an outflow of the liquid and to divide the injected fluid. I discourage the use of old solutions, preferring to make my solutions at the time I wish to use it. For convenience sake I have had tablets of nirvanin made, each containing 0.25 gm., of which I dissolve one of two in 10 c. cm. of water for immediate use. About two or three minutes after this treatment forceps may be applied. No alarming nor dangerous symptoms nor after-effects appeared or were ever noticed, and no difficulties of any kind resulted, except in the case of one patient who had a painless edema during one day. No pain is felt after the operation, and the process of healing is always normal. In all the cases the pulse was good. In several instances

we used a ten per cent solution of nirvanin to reduce the sensibility of the dentine, with most gratifying results. After inserting a tampon saturated with a ten per cent solution we could proceed with work in the excavations after a lapse of only two or three minutes. I advise adding 5 per cent of nirvanin to temporary fillings, and as a caustic paste for destroying pulps that is painless and at the same time antiseptic, I recommend the following:

Arsenious acid,	1,0
Nirvanin,	1,0
Lanoline, q. s. to make a paste.	

I have used nirvanin in several cases of pulp-capping, root amputations and root fillings, but prefer to reserve reports on these cases until later.

Nirvanin, in conclusion, has proven itself in my hands a most effective and lasting anesthetic in the treatment of painful conditions of the mucous membrane of the mouth. After experience with nirvanin I heartily indorse its use, and wish that others of our profession may make use of it and report results. Only thus will it be possible to arrive at a correct judgment as to its real efficacy.—*Deutsche Zahnaerztichen Wochenschrift* No. 39.

Orthoform, "Orthoform New" and Nirvanin

By Wm. Rotenberger, Munich.

For about a year orthoform has been used successfully in the entire range of medical science. The preparation was recommended for use in our special branch by Kallenberger (*L'Odontologie,* 30 May, 1898); Bornstein (*Zahnaerstl Rundschau,* No. 306), and especially by Jessen (*German Dental Weekly,* No. 10), and I was induced to try it. The brilliant results which I achieved with the orthoform induces me to group the cases in which the orthoform has become during my experiments entirely indispensable.

First. In cases of violent pains coming from an inflamed pulp lying free, the effect is instantaneous, the pain being at once relieved. It is not necessary to apply carbolic acid, as the orthoform itself has a strongly antiseptic effect, according to the investigation of Mosse in the clinic of Leyden in Berlin, and according to Fink, it is the best antiseptic in powder form. Orthoform is absolutely without smell or taste, in the application of which no

precaution of any kind need be observed, as it has no effect upon the intact mucous membrane, unlike carbolic acid.

Second. In pains after the extraction of teeth and roots, cases where chloroform, opium, camphor, tincture of aconite, cocaine, etc., had no effect.

I therefore apply orthoform after every extraction, and completely fill the wounds with the pain-allaying antiseptic, even when through extraction of the entire set of teeth numerous wounds are present. This can be done without fear, as the orthoform is entirely non-poisonous. According to the reports of Neumayer, Hecker, Klaussner and others, patients have been given 10 grammes or more at one time of the orthoform *per os* and 5-6 krg. has been applied externally upon the surface and its use continued for several months.

Third. In the treatment of buccal ulcers, burns, injuries of the gums and teeth, orthoform need only be used in order to at once stop the pain.

Fourth. For the filling of root channels, where I apply orthoform and asbestos. But my experiences in this direction are too limited to enable me to submit now a definite opinion concerning this method. Up to the present time iodoform (a substance in which, as is generally known, bacteria develop quickly) has been used for the same purpose. This substance is offensive on account of its taste and smell. Orthoform suppresses the growth of the bacteria entirely and is inodorous.

Fifth. When the excavating causes great pain I dry the cavities well, lay in orthoform and close with wax. After one or two days the cavity may be prepared painlessly, or at least with very much lessened sensibility.

I have made all these experiments also with the "orthoform new" without having noticed a difference in the effect of the two preparations, but as the "orthoform new" is cheaper by half than the hitherto-used orthoform, I now use the first exclusively.

After this experience I can join in the favorable criticisms which orthoform has elicited in dental literature, and am firmly convinced that every operator who is acquainted with this preparation will agree with me in the opinion that the same not only deserves a prominent place in the medicine chest of the dentist, but that the non-poisonous, odorless and tasteless orthoform, on account of its double nature as an anesthetic and antiseptic, seems to be destined to replace the less desirable medicines used in dentistry.

Of late the inventors of orthoform, Prof. Einhorn and Dr. Heinz, have been successful in finding a soluble orthoform, which is brought to

our notice under the name of "nirvanin," and is manufactured by the Farbwerke vorm Meister Lucius & Bruning, in Hoechst, on Main, which fills all the requirements of a local anesthetic (*Muench. Med. Wochenschrift,* 1898, No. 49). Nirvanin has the same anesthetic effect as cocaine, and is to be applied similarly, but it also possesses great advantages over cocaine, and all such remedies used by the dentist. It is absolutely harmless, causes no condition of excitement, respiratory or heart complications. The patient can arise at once after the extraction. Anxiety, dizziness, vomiting, fainting spells, which occur so often when cocaine is applied, are entirely absent.

For about three months I have made trials with the "nirvanin" in solutions of one per cent, two per cent and five per cent. My observations have brought me to the temporary conclusion that a solution of five per cent is the most certain in its effects for our purpose. Out of 164 extractions in which nirvanin has been used, 155 were painless. The nine cases in which it failed may have been the result of unfavorable circumstances. An operation of this kind may be a failure, as it is especially very difficult to inject a sufficient quantity about the lower molars.

As a syringe, I use the one of Bleichsteiner. I slowly prick into the gingiva, and exercising a uniform pressure upon the piston of the syringe, go forward to the periostium and empty one-half of the syringe; the other half I inject on the innerside of the gum adjacent to the tooth. After having waited three to five minutes, I extract the tooth painlessly. One injection is usually sufficient to make anesthetic several neighboring teeth, and I have been able to extract twenty-two teeth at one sitting with one injection, without any unpleasant after-effects. I have used nirvanin with best results also with children without any bad effect.

The five per cent nirvanin solution may be sterilized by heat without becoming decomposed in the least. The solutions of nirvanin can therefore be kept for weeks without decomposing. The stirilizing of a five per cent solution is not absolutely necessary, as the nirvanin itself has germicidal effect, and a solution of one per cent prevents the growth of bacteria, decay and fermentation. Nirvanin causes no edema, or at least very seldom.

Nirvanin is to be preferred to all known local anesthetics. I can only recommend my colleagues to try it, and convince themselves of its promptness in producing the desired effect. I seldom make use of narcotics, as I am able to do as much extracting in one sitting with nirvanin as in a chloroform narcosis.

I hope that the above short report may serve to attract the attention of my colleagues to nirvanin and induce them to try it. I am confident that no other anesthetic can be used as successfully, in extractions especially.—*German Dental Weekly,* No. 36.

XIIIth International Medical Congress,

Paris, 2-9, August, 1900.

The American National Committee of the XIIIth International Medical Congress, to be held in Paris from the 2nd to 9th of August, 1900, in connection with the French Exposition, has been organized.

All Doctors of Medicine are entitled to membership in this Congress by making the proper application and paying the sum of $5.00. The Secretary-General in Paris has instructed the American National Committee to receive the applications of American physicians, and for this purpose a blank form is enclosed, upon which is to be written full name and address, degrees and any position of note held, together with the Section of the Congress to which the writer wishes to belong. A visiting card should also be appended. These forms, with the $5.00, are to be returned to the Secretary of the National Committee. He in turn will send receipt and forward the slips and money to Paris, where they will be registered, and in due course of time a card of admission to the Congress mailed to each applicant.

The Committee hopes the American representation in this extremely important Medical Congress may be as large as possible, and they would urge every member of the profession to enter his name for membership, this alone entitling him to receive a digest of the full proceedings of the Congress and the printed report* of the Section to which he belongs.

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*Communications respecting the delivery of these reports to members to be addressed to M. Masson, publisher of the proceedings of the Congress, 120, boulevard St-Germain, Paris.

The Sections are as follows:

CLASS I. BIOLOGICAL SCIENCES.

A. Section of Descriptive and Comparative Anatomy.—Secretary: M. Auguste Pettit, 60 Rue Saint-André-des-Arts, Paris.

B. Section of Histology and Embryology.—Secretaries, M. M. Retterer and Loisel, 15 Rue de l'Ecole-de-Médicine, Paris.

C. Section of Physiology, and Biological Physics and Chemistry.—Secretary: M. Dastre, à la Sorbonne, Paris.

CLASS II. MEDICAL SCIENCES.

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B. Section of Bacteriology and Parasitology.—Secretary: M. R. Blanchard, 226 Boulevard Saint-Germain, Paris.

C. Section of Pathological Anatomy.—Secretary: M. Letulle, 7 Rue de Magdebourg, Paris.

D. Section of Internal Pathology. (General Medicine.)—Secretaries: M. Rendu, 28 Rue de l'Université, Paris; M. Widal, 155 Boulevard Haussmann, Paris.

E. Section of Medicine of Infancy. (Diseases of Children.)—Secretary: M. Marfan, 30 Rue La Boëtie, Paris.

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H. Section of Psychiatry.—Secretary: M. Ant. Ritti, Asile de Charenton, Seine, (France).

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D. Section of Ophthalmology.—Secretary: M. Parent, 26 Avenue de l'Opéra, Paris.

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F. Section of Otology.—Secretary: M. Castex, 30 Avenue de Messine, Paris.

G. Section of Stomatology.—Secretary: M. Ferrier, 39 Rue Boissy-d'Anglas, Paris.

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CLASS V. PUBLIC MEDICINE.

A. Section of Legal Medicine.—Secretary: M. Motet, 161 Rue de Charonne, Paris.

B. Section of Military Surgery and Medicine.—Secretary: M. Catteau, Ministère de la Guerre, Paris.

Members desiring to present papers will forward the title and résumé before May 1st, 1900, to the Secretary of the Section to which they belong, for each sectional committee reserves to itself the right of drawing up its own working programme. Papers are limited to 15 minutes. Very sincerely yours,

HENRY BARTON JACOBS,
Secretary American National Committee.

G. SECTION OF STOMATOLOGY.

President, M. Pickiewicz; Vice-President, M. Gruet and M. Gaillard; Secretary, M. Ferrier, 39, Rue Boissy-d'Anglas, Paris; Members M. Beltrami, Marseilles; M. Chompret, M. Faré, Tours; M. Faure, M. Fleury, Rennes; M. Gires, M. Hugenschmidt, M. Jarre, M. Malassez, M. Martin (Claude), Lyons; M. Redier, Lille; M. Rodier, M. Rosenthal, Nancy; M. Sebileau, M. Tellier, M. Thomas.

QUESTIONS:

1. The intervention of therapeutics in anomalies of position and direction, of the teeth.
2. Immediate prosthesis in its applications to the surgery of the face.
3. Influence of the affections of the mouth and of the teeth on the other organs and on the general systems.
4. Choice of antiseptics in the treatment of caries of the teeth.
5. Treatment of alveolo-dental pyorrhea.

The National School of Dental Technics.

The meeting of the National School of Dental Technics is to be held in Philadelphia, at the Continental Hotel, beginning at 10 a. m., Wednesday, Dec. 27, and continuing three days.

Every teacher in the profession should be present. A most excellent programme will be presented, consisting of a lecture and demonstration by Prof. J. Liberty Tadd, and papers by Drs. Faneuil D. Weisse, C. S. Case, D. A. Gritman, A. E. Webster, W. H. Whitslar, M. H. Cryer, H. J. Goslee, Otto Arnold, I. N. Broomell, G. V. Black, A. H. Thompson, James Trueman and others.

GEO. H. WILSON, Cleveland, O.

Jefferson County Dental Society.

The Jefferson County Dental Society will hold its fourth annual meeting in Watertown, Dec. 11, 1899. The morning will be devoted to clinics, the afternoon to reading of essays.

E. P. DENNY,
Watertown, N. Y.

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December
1899

R. Ottolengui, M.D.S.
Editor
115 Madison Ave.
New York

JUST ONE YEAR AGO, we explained to our readers that by reason of the already large and constantly increasing number of subscribers to ITEMS OF INTEREST, and consequent additional cost of producing the magazine, each monthly edition would be confined closely to the number of copies actually subscribed for; with the caution that delay in sending renewal might result in failure to receive the earlier numbers.

RESPONSE WAS PROMPT; so prompt in fact that during the month of December, many thousands of renewals were recorded, thereby saving a majority of our subscribers the annoyance incident to a delay in receiving the magazine,

WE WERE GRATEFUL for your promptness. It avoided mistakes in our mailing list by preventing transfer of names, and saved us an immense amount of bother. In dental journalism, "ITEMS OF INTEREST" is synonymous with "PROGRESS." ITEMS OF INTEREST for 1900 will be better than ever. It never retrogrades. For twenty years it has been advancing all the time. For more than four years it has led all others in popularity. Its contents are bright, readable, and well illustrated. It gives the news in dentistry. Yearly subscription price to U. S., Canada and Mexico, only $1.00. To foreign countries of Universal Postal Union, $2.00.

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Items of Interest

CONTENTS

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CONTENTS—Continued

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Address all communications to Consolidated Dental Mfg. Co., Publishers, No. 115 West 42d St., New York.

Vol. XXI.—No. 12.

This number of ITEMS OF INTEREST completes its Twenty-first Volume. It also completes the third volume produced under the present editorship and management, and in the magazine's present form.

From the standpoint of publishers, we feel grateful to the Dental Profession for the very generous support the magazine has received for the past three years, and especially during the year just closing. Gradually, from month to month, numerous new subscriptions and renewals of old subscriptions have been received, until now the subscription list of ITEMS OF INTEREST contains the names of nearly three-fourths of all of the practicing dentists in the United States, besides a large number in Canada, Mexico and other foreign countries. Several thousands of dentists, who had not previously received the ITEMS, are recorded as subscribers to its XXIst volume, while the number of subscriptions not renewed is extremely small.

Elsewhere, in this issue of the magazine, may be found a brief review of the work that has been accomplished for ITEMS OF INTEREST during the past year. That the showing is creditable, we admit; but the good work will not cease. Each succeeding year must exhibit a marked improvement in the magazine. Expense has not been and will not be spared in an endeavor to make the magazine from every point of view the very best publication devoted to the science of dentistry.

Nothwithstanding the improvements already accomplished, the subscription price remains as before, One Dollar a year, in United States and Canada. Foreign countries, $2.00 per year.

If your subscription expires with this number, the publishers will earnestly appreciate its prompt renewal.

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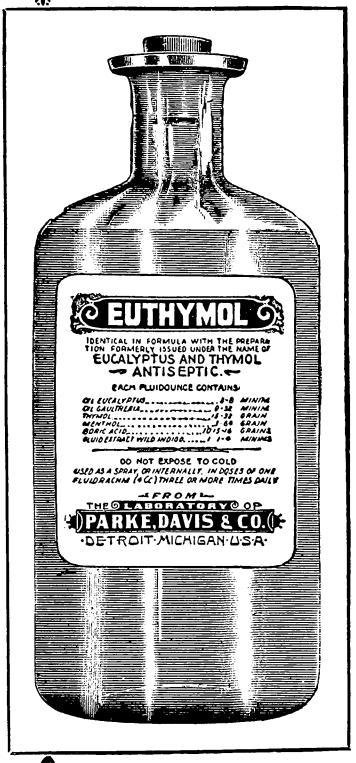

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Twos (2s)

Fours (4s)

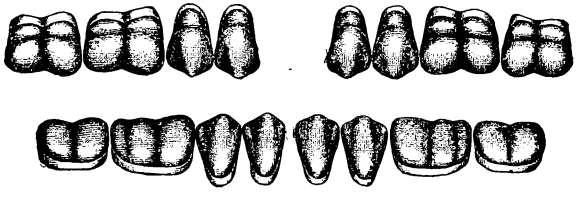
Sixes (6s)

Eights (8s)

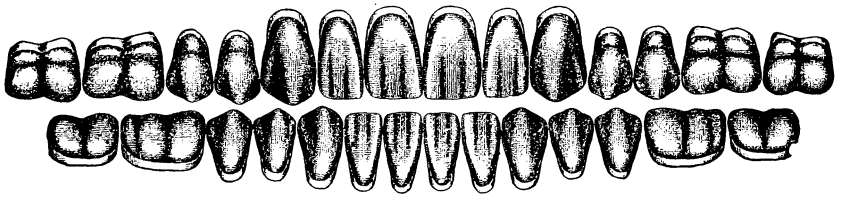
Tens (10s)

Fourteens (14s)

Sixteens (16s)



Twenty-eights (28s)

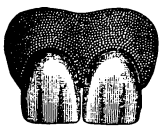


NOTE—*If upper and lower 6s are wanted, specify* **12s**

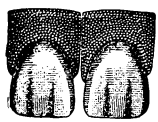
Consolidated Dental Manufacturing Co.'s Porcelain Teeth

Chart of Gum Rubbers in Partial and Full Sets, with Terms to Be Used in Ordering

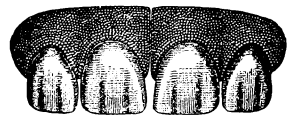
Twos (2s)



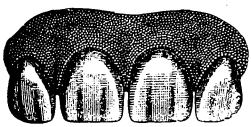
Single Gum Twos (2s)



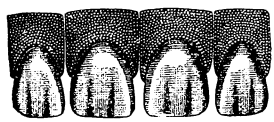
(Fours 4s)



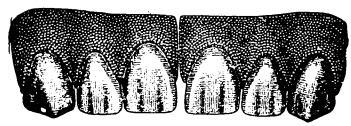
Fours (4s) in One Section



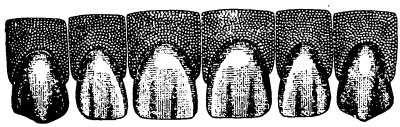
Single Gum Fours (4s)



Sixes (6s)

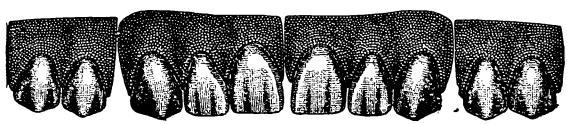


Single Gum Sixes (6s)

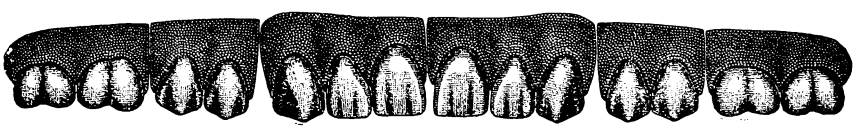


Single Gum Lower Sixes (6s)

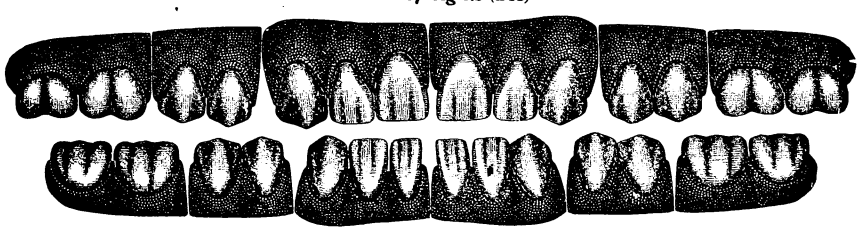
Tens (10s)



Fourteens (14s)



Twenty-eights (28s)

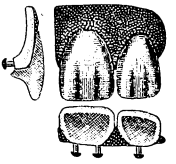


NOTE.—*If upper and lower 6s are wanted, specify 12s*

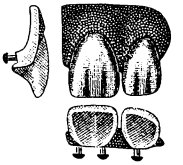
Consolidated Dental Manufacturing Co.'s Porcelain Teeth

GUM RUBBER UPPERS

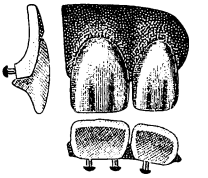
(Chart for Ordering 4s



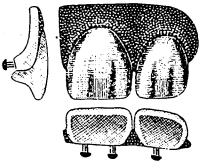
16



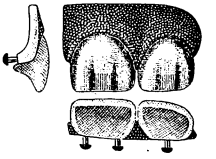
21



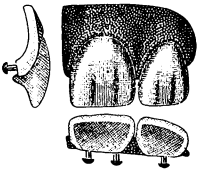
26



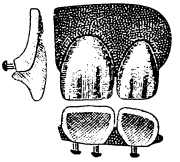
17



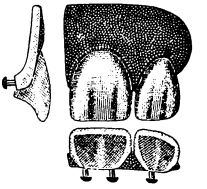
22



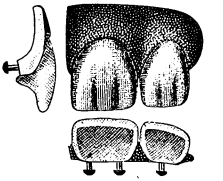
27



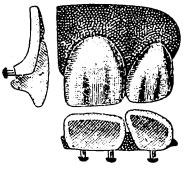
18



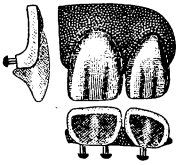
23



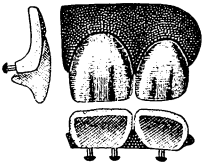
28



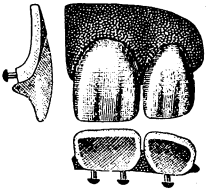
19



24



20



25

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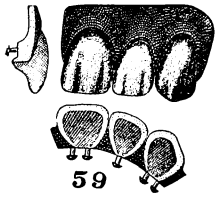
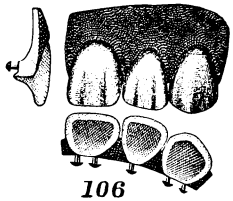
NEW MOULDS.

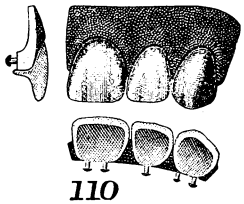
Consolidated Dental Manufacturing Co.'s Porcelain Teeth

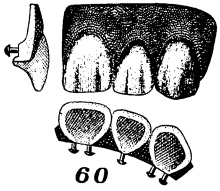
GUM RUBBER UPPERS.

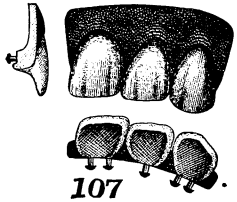
(Chart for Ordering 28s, 14s and 6s.)

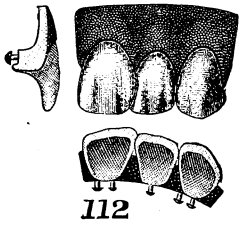

59

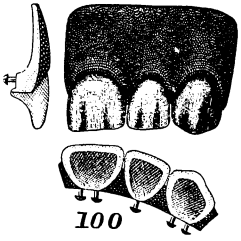

106


110


60


107


112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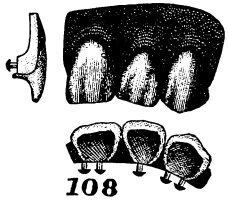
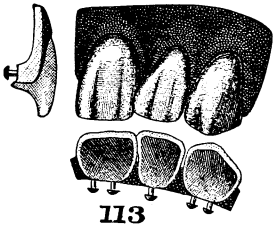
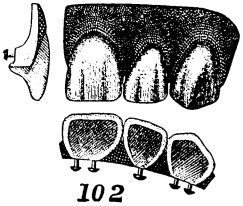
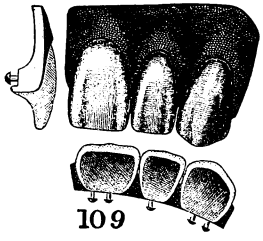
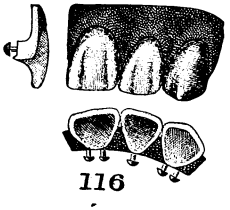

108


113


102


109

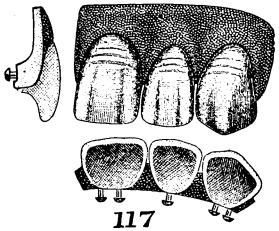

116

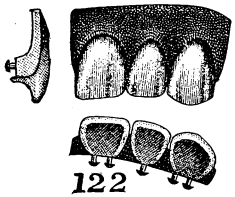
NEW MOULDS.

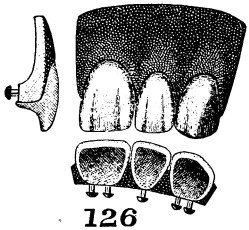
Consolidated Dental Manufacturing Co.'s Porcelain Teeth

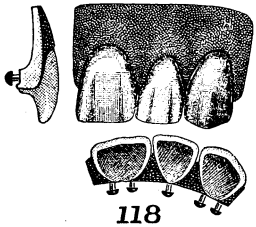
GUM RUBBER UPPERS.

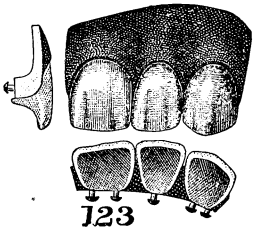
(Chart for Ordering 28s, 14s and 6s.)

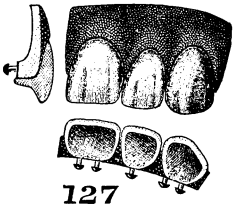

117


122


126


118


123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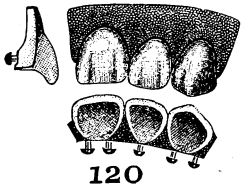
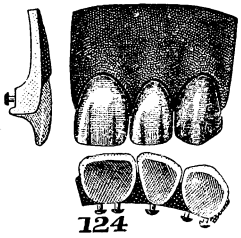
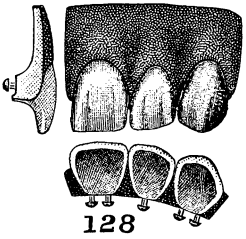
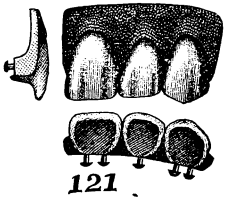
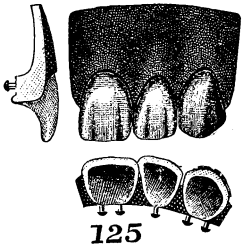
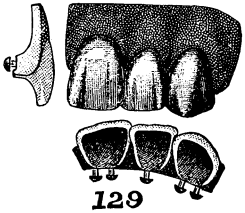

120


124


128

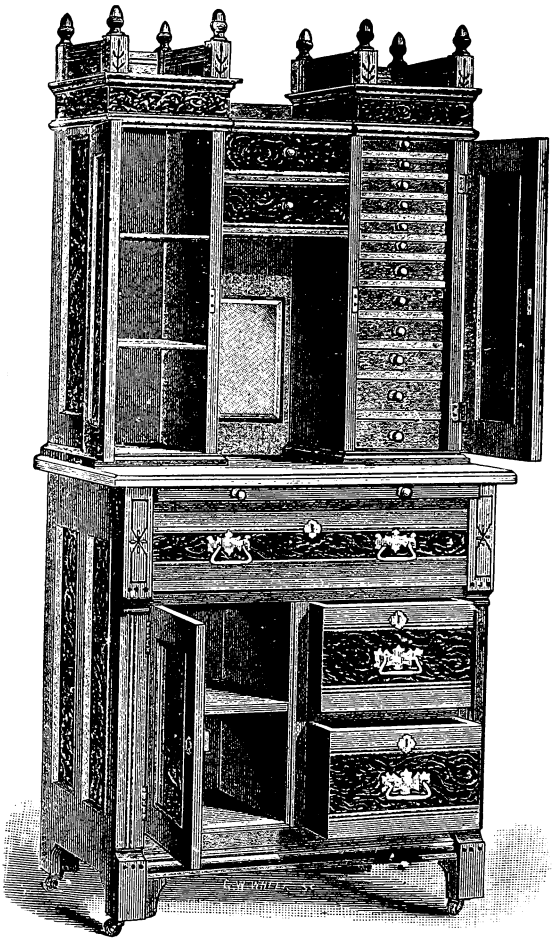

121


125


129

DENTAL CABINET, STYLE A.

OPEN.



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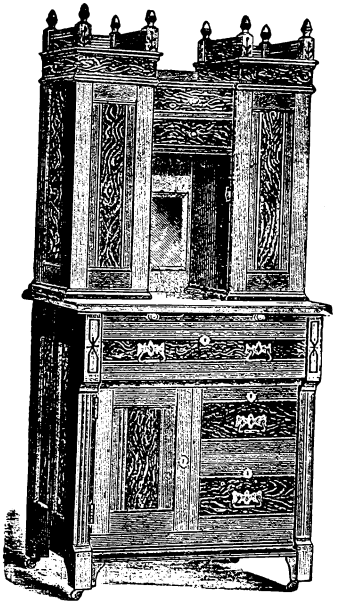


This Cabinet Case is made of Black Walnut or Antique Oak, hard oil finish. The panels are French veneer, and the mountings are all nickel-plated. The total height is 5 feet 8 inches; width, 31 inches; depth, 19 inches.

The upper part has twelve drawers on the right side, 8⅜x7¼, enclosed by a paneled door; six of these are ⅝ inch deep; four, 1⅜ inches deep; two, 2⅛ inches deep. On the left side a space same size, with adjustable shelves for medicines. Connecting the two parts above are two drawers, 9⅜x9½, 2 inches deep. Below these drawers is a beveled plate mirror, 9½x9¼ inches.

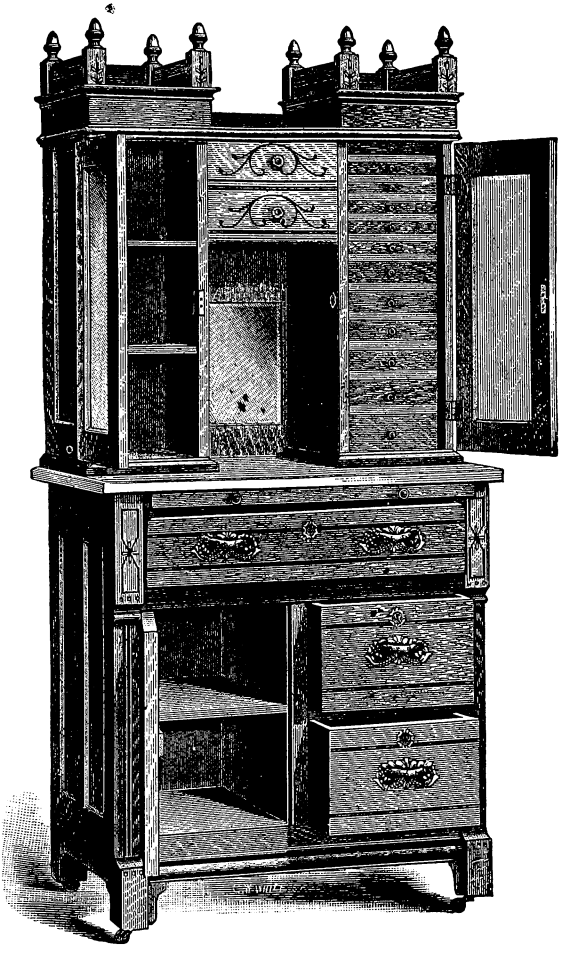
The lower portion contains one drawer, 15½x24, 4⅜ inches deep, with slide drawer over it, 15½x24, ½ inch deep, lined with felt cloth; two drawers, 12¾x13¼, 8¼ inches deep. Also a closet, 19x12¾, 15½ inches deep, with shelf.

PRICES:

With Wood Top	$30.00
With Knoxville Marble Top	35.00

DENTAL CABINET, STYLE B.

OPEN.



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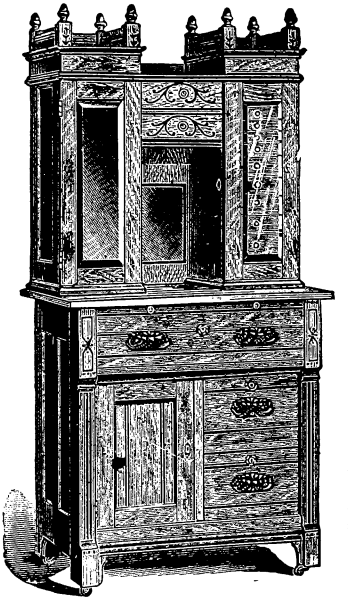


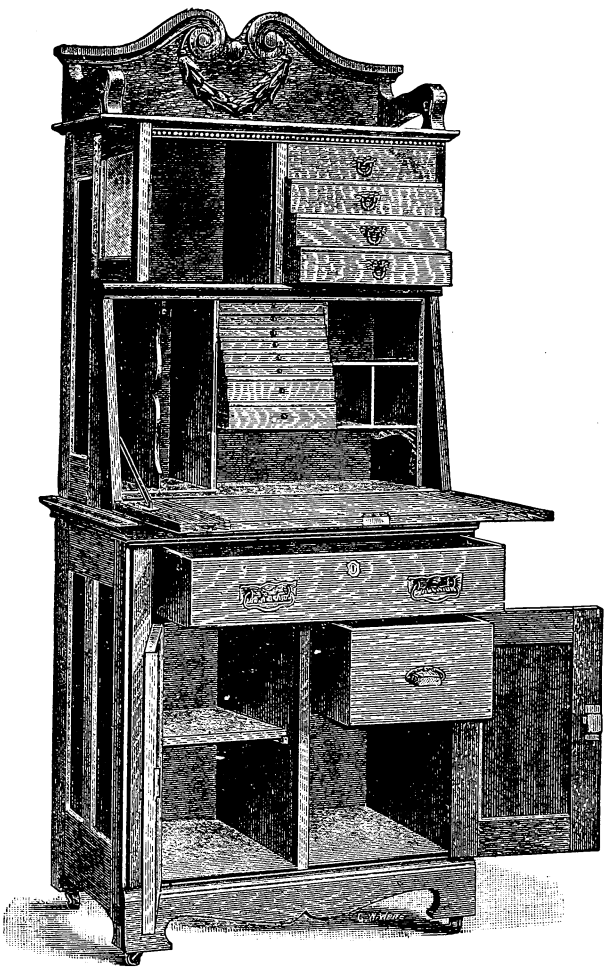
As shown in the illustration, our Style B Cabinet differs from Style A in that it has a fine beveled French plate-glass door, showing the tier of small drawers, with veneered fronts, and a beveled French plate-glass mirror on the left side, but without the mirror in the recess of the top. In all other respects it is made from the same design as No. 1, but the wood-work is given a better finish. We furnish them in Black Walnut or Antique Oak, hard oil finish. The above illustration shows the Antique Oak.

PRICES:

With Wood Top	$33.00
With Knoxville Marble Top	38.00

DENTAL CABINET, STYLE E.

OPEN.

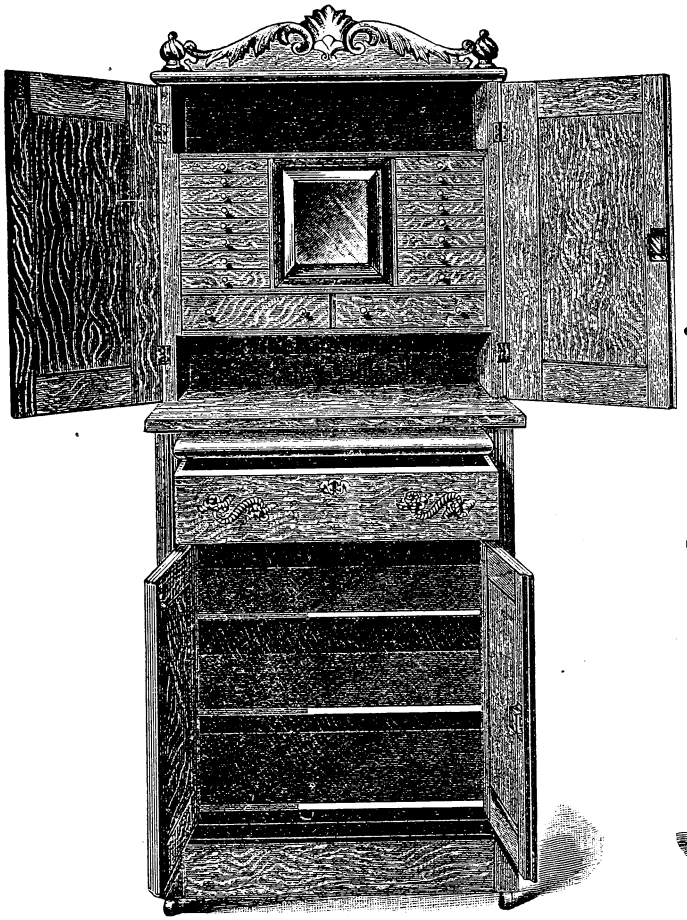


Height, 68 inches; width, 32 inches; depth, 19 inches. Upper portion is divided into a Medicine Closet, 13½x10¼x11 inches; the door to this closet is panelled with a beveled plate mirror, 7x11 inches. Four felt-lined drawers, each 8¾x12⅞x2½ inches. Sufficient space for account books, paper, envelopes, etc. Tier of eight drawers, six of these, each 9x9¼x¾ inches, and two, each 9x9¼x1¾ inches, all felt lined. Lower portion: large drawer, 15¾x25x4½ inches, containing a felt-lined sliding tray for instruments, 7x2x1¼ inches. Two closets, each 16½x12¾x19½, one with shelf, the other with a commodious drawer.

Price, $40.00.

DENTAL CABINET, STYLE F.

(OPEN.)



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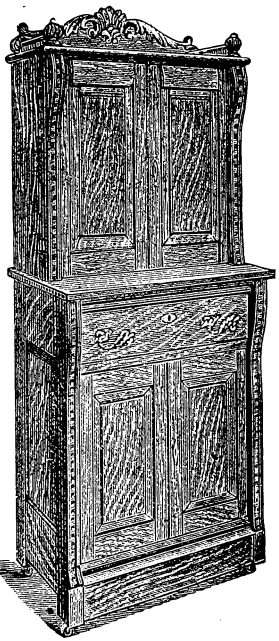


The Cabinet here illustrated is regularly made in solid Quartered Oak, and is arranged throughout for the dentist's convenience. The escutcheons, casters and hardware generally, are first-class. The Cabinet presents a handsome appearance.

The specifications are: Height, 5 ft. 8 in.; width, 27 in.; depth, 18 in. Sixteen small drawers in top measuring from 7¼ in. x 6½ in. x ⅞ in. to 7¼ in. x 6½ in. x 1¼ in., and two larger drawers 11¼ x 7¼ x 2⅜. Handsome French plate mirror in top, 8 in. x. 8 in. Shelves in top and lower portion, as illustrated. Large drawers in lower portion, 22¼ x 12½ x 4½, above which is a large slide 22¼ x 12½, covered with fine felt. Each Cabinet is supplied with a turned block for holding Engine Equipments.

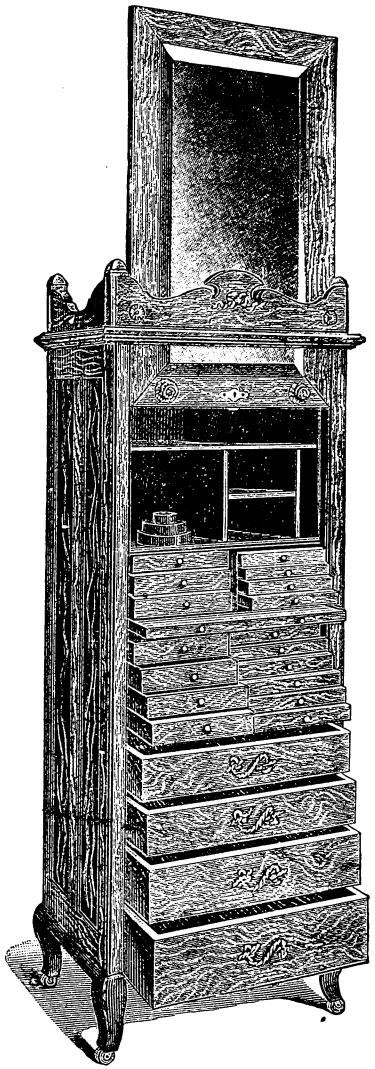
PRICES:

In Quartered Oak, as illustrated	$35.00
In Walnut	40.00

(Note.—Furnished in Walnut only on special order.)
With White or Tennessee Marble Top, $3.00 additional.

DENTAL CABINET, STYLE G.

(OPEN.)



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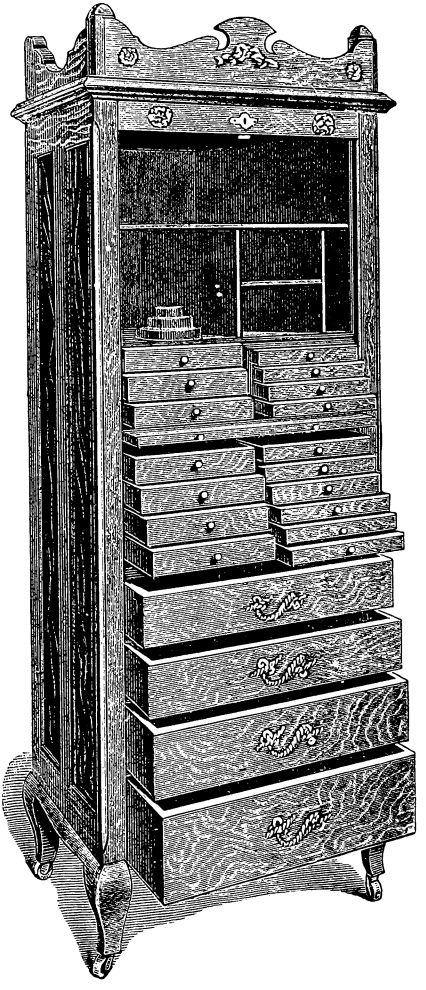
Cabinets styles G and H can be recommended as the "Crême de la Crême' of dental furniture. Their elegant appearance, combined with the compact and convenient arrangement of the various compartments and accessories, render them especially desirable. The finish on both is of the very highest order. The cabinets are distinguished by several unique features adopted for the convenience of dentists. The illustrations give a very good idea of their general appearance. The large slide, covered with fine felt, extends to a distance of 10 inches, and answers the purpose of a desk or table. A special feature is the case of four small drawers to the right in the upper portion of the cabinet. The top of this case of drawers is covered with leather or felt, and the whole tier can be drawn out the distance of 10½ inches, forming a suitable place for mixing cement, cutting foil, or for other work. When the case and drawers it contains is pulled out to their limit, the total extent of their projection from the body of the cabinet is 21½ in.

DENTAL CABINET, STYLE H.

(OPEN.)



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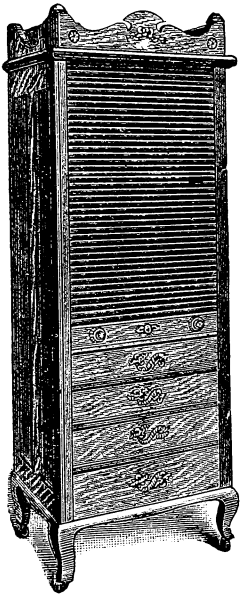


Style G Cabinet has a sliding door as illustrated, with beautiful French plate mirror front. Cabinet style H has the more graceful arrangement of a roll front which rolls down and covers the entire cabinet with the exception of the four lower drawers, and slides back out of sight when the cabinet is open.

Specifications: Height, 5 ft. 10 in.; width, 24½ in.; depth, 18 in. Seventeen small drawers measuring 11½ in. x 8¼ in. x ¾ in. to 12¾ x 9¼ x 1½. Four large drawers with depth of 3¼ in. to 5⅜ in. Drawers are all finished inside and small drawers are provided with stops. Sides are beautifully paneled, escutcheon and drawer-pulls are first-class: the feet are neatly formed and there is sufficient space for sweeping under the cabinet.

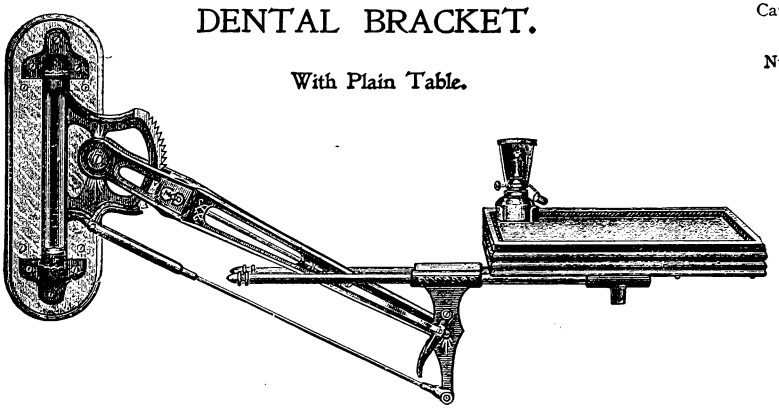
PRICES:

Cabinet Style G with mirror front	$40.00
Cabinet Style H with roll front	45.00

DENTAL BRACKET.

Catalogue 9 Number

With Plain Table.



For strength, convenience, ease of manipulation and neatness of appearance, this bracket is unexcelled.

Pressure of the forefinger upon the trigger releases the ratchet so that the arm can be elevated or lowered with one hand. The bracket is held in position securely by four steel teeth which project into the ratchet attached to the wall casting. The table revolves in a socket, and can be extended from or brought closer to the wall by sliding the parallel tubes. The table has a horizontal range of 12 inches, and bracket has a swing of 46 inches.

The brackets are finished in three different styles: No. 9A, nickel plated throughout; No. 9B, black enamel finish on castings and nickel plated rods and tubing; No. 9C, antique copper finish throughout.

With each bracket sold complete with table is furnished an alcohol lamp, stand, and flame shield.

PRICES.

Bracket No. 9A, 9B, or 9C.

With Plain Table, as shown	$14.00
With Wood Panel Sides, Allan Table (oak, mahogany or walnut)	17.00
With French Plate Mirror Sides Allan Table (oak, mahogany or walnut)	18.00
Without Table	10.00

ALLAN BRACKET TABLE.

Catalogue 11 Number

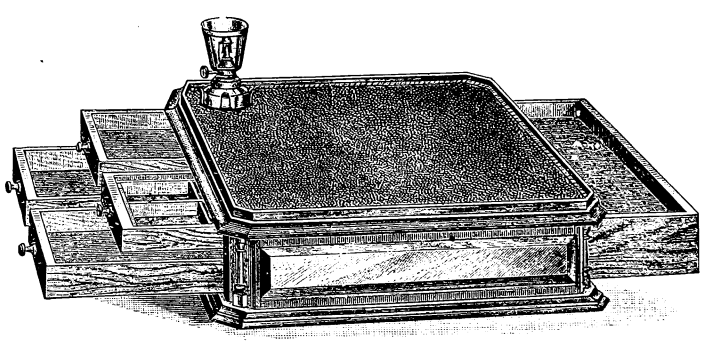


Table is 13½ inches square and 3½ inches deep. Contains five drawers, with spaces to receive engine instruments, etc., as illustrated. Made of the best and thoroughly seasoned wood and of exquisite workmanship throughout. The top is covered with leather or fine cloth. Made in Oak, Walnut and Mahogany, and with sides of wood or French beveled plate glass mirrors.

PRICES.

With Wood Panel Sides (either oak, mahogany or walnut)	$9.00
With French Plate Mirror Sides (either oak, mahogany or walnut)	10.00

Porcelain Inlays

Dr. John H. Meyer's Method

Dr. Meyer, who has had a long experience in the manipulation of Porcelain, sends us the following letter in regard to our new set of Inlay Material. His suggestions are prompted by an experience of over thirty years, and are accordingly valuable:

CONSOLIDATED DENTAL MFG. CO.

Gentlemen: I congratulate you on being able to place before the dental profession a scientific method whereby the art of using Porcelain Inlays is brought nearer than ever to perfection. Your "High-fusing Inlay Material" gives the best results, in the use of which I would offer the following suggestions:

There should be no undercuts. The matrix or mould of the cavity must be made of very thin, pure platina. This should be annealed during the adaptation, over a Bunsen burner or under a blowpipe, but should be subjected to the heat for at least three minutes, the long heating making it soft. Cut a piece of platina a trifle larger than required by the cavity, press the metal over the end of a blunt instrument, carrying it to the bottom of the cavity, and burnish with a ball burnisher perfectly smooth; the edge of the metal should overlap the cavity, then be smoothed down to the tooth. When well adapted, again anneal the metal and do the final finish with a ball of cotton. Should a tear occur in the bottom of the matrix, place a small piece of platinum over it; if this is not done the body will flow through the opening, and cause the Inlay to rock. When the matrix is adapted to the shape of the cavity, force moderately hard wax into it; remove matrix and, with a very fine camel's hair brush, oil the side next to the tooth; and place it into a preparation of sand and plaster (equal parts) mixed with water. When the investing material has hardened, remove wax and fill the matrix with the Inlay Material in a creamy state. A few taps on the investment will bring the moisture to the surface. Take a piece of soft linen and press the Inlay Material gently into the matrix. In this manner the moisture is not only absorbed but the fine ingredients of the material are pressed together causing the less shrinkage. Build the body in the matrix higher than required; it being well packed the surplus can be trimmed off with a suitable spatula. When the Inlay is thus prepared, bake it, in the investment made, in any suitable furnace. Only one baking is required for an ordinary Inlay, but for a very large cavity place a small quantity of the Inlay Material in the bottom of the matrix, fill the matrix almost to the top with a piece of newly broken tooth, then add material to fill the matrix and proceed the same as for smaller cavities.

With reference to the use of hydrofluoric acid, I feel impelled to caution the user not to allow it to come in contact with his fingers.

Yours truly, JOHN H. MEYER.

Porcelain Inlays

PRICE LIST OF "HIGH-FUSING" OR "LOW-FUSING" MATERIAL

NOTE.—*Always state whether "High-Fusing" or "Low-Fusing" material is desired.*

Set complete, as illustrated, containing twelve bottles of the porcelain material, approximating common tooth shades	$10.00
Set complete, containing twelve bottles of the porcelain material (Basal or Primary shades), with Table for mixing to produce respective tooth shades	10.00
NOTE.—*This set only supplied on orders when "Basal or Primary" shades are specified.*	
INLAY MATERIAL, separate bottles of—each	1.00
INLAY SHADE RING, if bought separately each	1.00

INLAY CEMENT

Four Colors; per package, $2.50

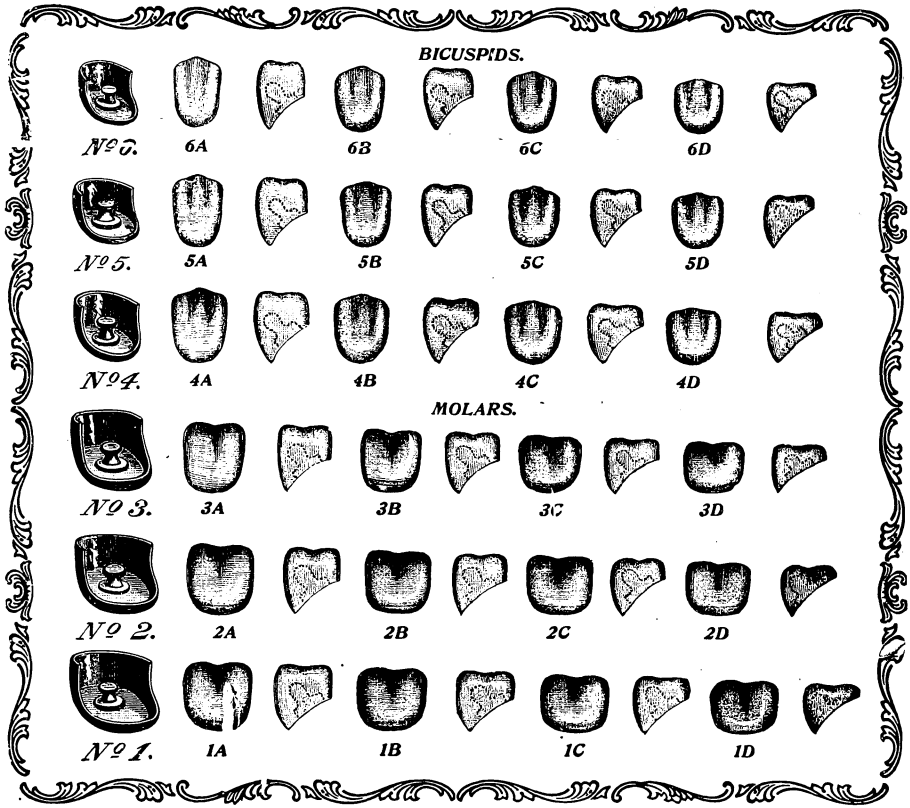
In connection with the use of our Inlay Material Dr. Head suggested that we should prepare a special cement that would "set" sufficiently slow to afford the operator time to fit the filling snugly into place, and avoid the possibility of a defective joint. He thought it best to prepare four colors, the combining of which would produce any desired shade. Samples were submitted to the Doctor from time to time, and his verdict was finally given as follows:

"They are perfectly satisfactory, and it gives me great pleasure to say that I can thoroughly indorse them as perfectly fitted for the work of inserting porcelain inlays."

THE DAVIS CROWN ADAPTED TO TOWNSEND'S SYSTEM OF BRIDGE-WORK.

(Continued.)

CHART FOR ORDERING.



DIRECTIONS FOR ORDERING.

The illustrations of these Crowns are exact size. Ascertain the width and length of teeth required and so specify by the numbers on this chart, making allowance for thickness of the gold.

Indicate shade wanted by the shade guide of any tooth manufacturer, or send sample tooth for shade.

It is always an advantage to us, in executing orders for these Cups and Crowns, to have plaster impression and "bite" for our guidance as to width and length of teeth required.

PRICES:

Gold Cup No. 1, 2 or 3, Molars, complete with Porcelain Crown, each, $2.25

Gold Cup No. 4, 5 or 6, Bicuspids, complete with Porcelain Crown, " . 2.00

Duplicate Porcelain Crown for any of the above Gold Cups, Nos. 1, 2, 3, 4, 5 or 6, each, ...40

DR. C. A. DAVIS' PATENT SHOULDER PIN CROWN.

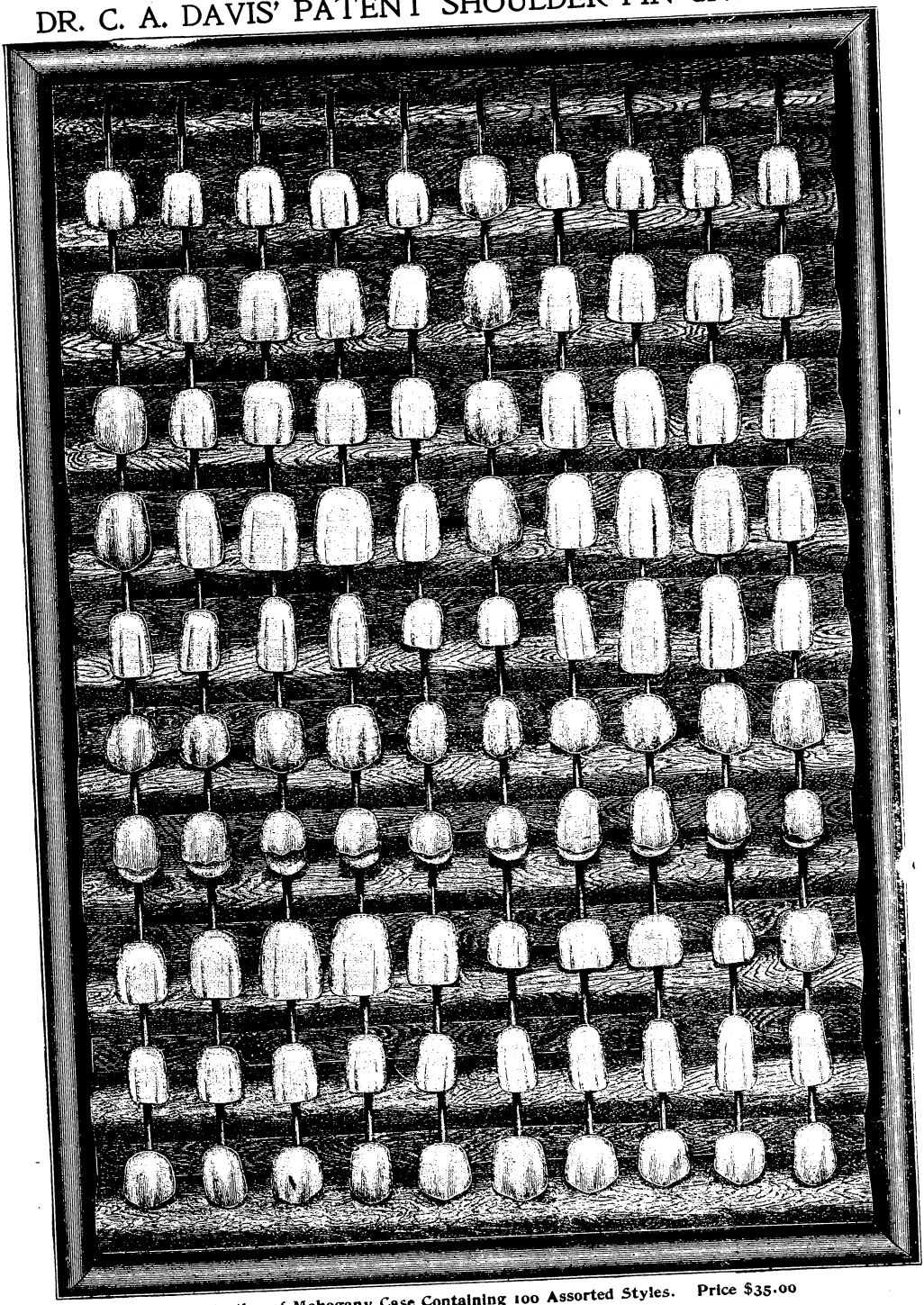


Illustration of Mahogany Case Containing 100 Assorted Styles. Price $35.00

DR. OTTOLENGUI'S ROOT REAMERS AND FACERS.

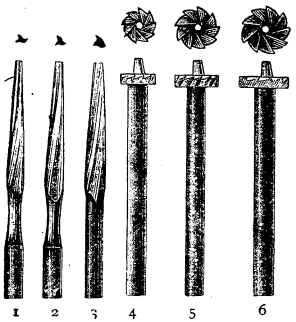
Perhaps the most universally used of all instruments for adapting the natural root to a porcelain crown is the set invented by Dr. Ottolengui, illustrated below. The reamers (Nos. 1, 2, 3) have smooth ends and cut only on the sides. They are used to enlarge the canal after it is drilled to the proper depth to fit the pin of the crown. The top of the root is then readily shaped with Facers, Nos. 4, 5, 6, the guide point acting as a pivot.

Catalogue
54
Number

PRICES:

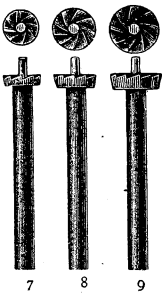
Nos. 1, 2 and 3,	each,	$0.60
" 4 and 5	"	1.00
" 6	"	1.25
" 7, 8 and 9	"	1.00

Catalogue
54 A
Number



SAFE-SIDE ROOT-FACERS.

These new Root-Facers supplement the Ottolengui Facers as means for paring the labial border of the root-end beneath the gum-margin to conceal the junction of the crown with the root. Obviously the rounded side of the new Facer renders it safe from liability to wound the gum at its free margin.



Catalogue
83
Number

CHAMPION DENTAL ENGINE OIL.

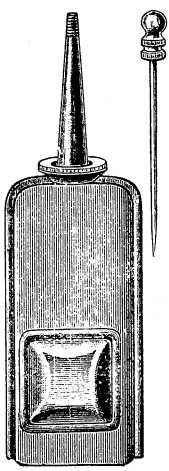
The enormous sales of this oil, against the numerous imitations and substitutes which have been put forth, speak most eloquently for its peculiar virtues.

It is very carefully prepared by processes adapting it especially for uses on delicate instruments, such as hand-pieces, etc. It is without color, taste or odor, and stands to-day as the "Champion" indeed of all lubricants offered for dental uses.

Price 15 Cents per Bottle.

Catalogue
84
Number

OILER



The advantages of this Oil Can can readily be appreciated. It at once furnishes a most neat and convenient receptacle for keeping dental engine oil; and the pin is serviceable in cleaning out dirt and foreign matter from the bearings before applying the oil.

Price. 15 cents each.

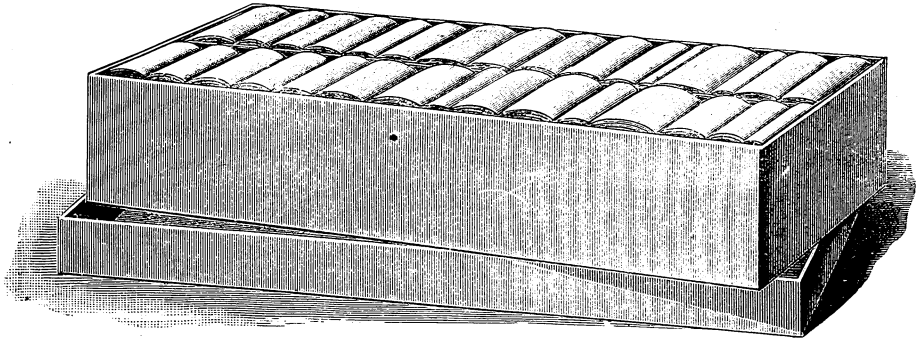
Our Line of Absorbents.

ABSORBENT COTTON.

Best quality, two-ounce packages. Price, 20 cents.

Catalogue No. 229C.

ABSORBENT COTTON ROLLS.



Varying in size. Price, 35 cents.

Catalogue No. 229B.

COTTONOID.

Quarter-pound packages. Price, 25 cents.

Catalogue No. 229D.

JAPANESE BIBULOUS PAPER.

Best quality, free from all defects. Packages of fifty sheets. Price, 15 cents.

Catalogue No. 229E.

SELECTED SPUNK.

Extra fine quality. One-ounce packages. Price, per oz., 20 cents.

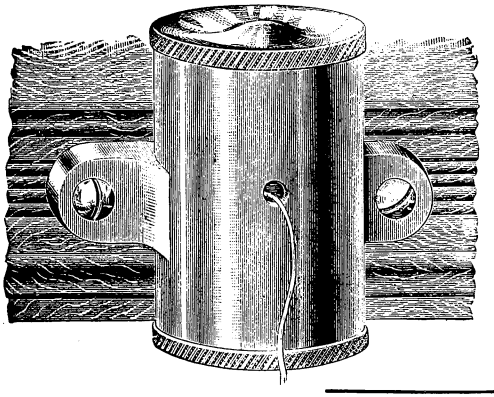
Catalogue No. 229F.

"ASEPTIC" DENTAL NAPKINS.

Packages of fifty. Price, 25 cents. Sample free.

Catalogue No. 229A.

FLOSS SILK HOLDER
No. 14



Designed, to be attached to the bracket table, as a convenient method of holding dental floss, keeping it always handy and free from dirt. The top unscrews, and spool is placed inside, where it revolves upon a steel axle that is fastened to bottom of the holder. The whole is exceptionally well made and handsomely nickel-plated.

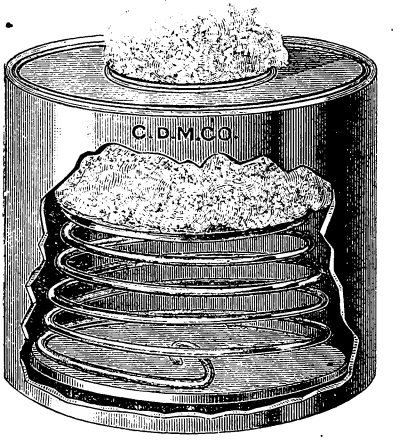
Price, 75 cents

COTTON HOLDER
No. 15

(*Dr. Methot's Pattern*)

This absorbent cotton Holder is made of brass, highly polished and nickel-plated. It consists of an outside cylinder and an inside spring with a metal disk on each end, one disk making the bottom of the holder, being held in place by three pins, the other disk pressing the cotton through the round aperture on the top. Sufficient cotton is always exposed for use.

Price, 70 cents



COTTON HOLDER, No. 16

Our No. 16 Cotton Holder has a device that catches the cotton after it has been used and removes it from the plugging pliers or other instrument. It used to be that to relieve the foil carrier of the cotton pellet which, being saturated with adhesive medicaments, would stick securely to same, the dentist would have to remove it with his fingers.

Inside the cotton reservoir is a metal disk, forced against the contents by pressure of a stiff spring, and serving to keep sufficient quantity of cotton always ready for use.

The pad containing the steel wires can be removed and a new one inserted when necessary. Provision is made for attaching the instrument to bracket table by means of a screw through the plate which holds the wires.

Price, $1.00

The Conical-Shaped Top allows the cotton to "feed" easily

Dr. Richards' Waste Cotton Receptacle and Tool Cleaner

No. 25.

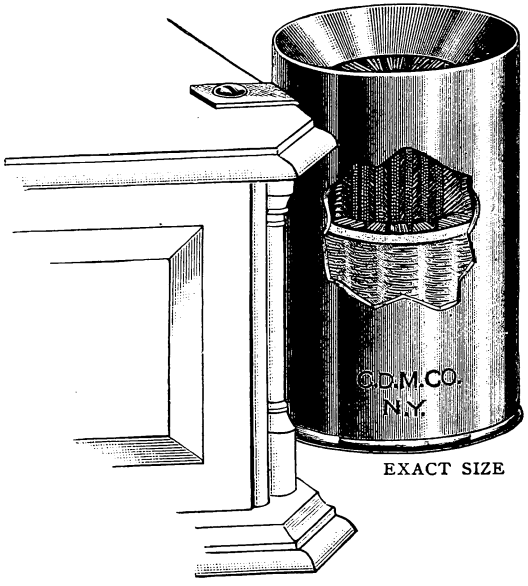
Invention of Dr. Wm. P. Richards

This is a very neat and practical device for removing the soiled cotton pellet from the pliers, saving much time and annoyance. By a quick twist of the instrument the cotton is removed at once, no matter how tightly wound.

The device consists of a metal cylinder containing a pad, with projecting wires, which catch the cotton and hold it securely, permitting the instrument to be withdrawn entirely clean. The cup at bottom slides out, also the wire pads, and can be cleaned equal to new. It is handsomely nickel-plated, and can be screwed to edge of bracket table, as shown in illustration.

PRICE 50 CENTS.

EVERYTHING GOES OUT OF SIGHT.



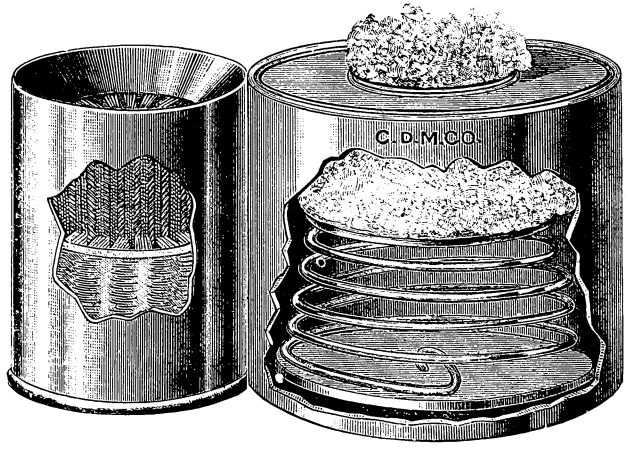
EXACT SIZE

SCREWED TO EDGE OF BRACKET TABLE.

No. 24.

Style C Cotton Holder

With Richards' Waste Cotton Receptacle and Tool Cleaner.

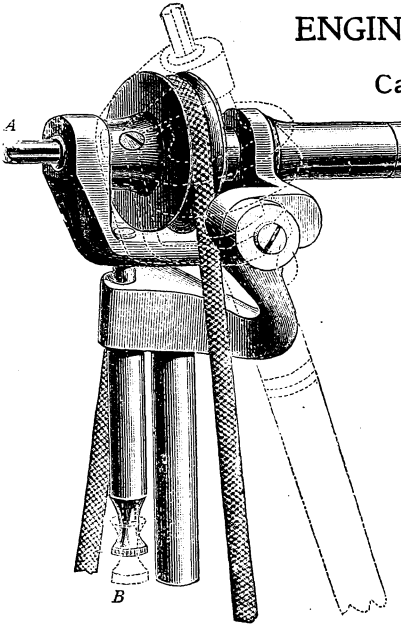


As illustration plainly shows, this device is simply a combination of Dr. Richards' invention, slightly modified with our style A, or Methot's pattern, Cotton Holder. Cut shows interior view of each of the cylinders. Every dentist can appreciate the advantages which this combination offers.

Price, Handsomely Nickle-plated, $1.25.

ENGINE PULLEY HEAD.

Catalogue No. 33.



Strength, combined with simplicity of construction, ease of operation and neatness of appearance, constitutes the chief point of merit possessed by our Engine Pulley Head. The illustration is about two-thirds the actual size, and gives a good idea of its general construction.

The pulley wheel has two bearings and is placed in the fork as illustrated, thereby obtaining increased strength and avoiding loss of motion.

The pulley head is locked automatically, by elevating the engine arm, thus permitting the small spring bolt A to slide into position as illustrated, and vice-versa the head will fall by releasing this bolt. B represents the steel rod which passes through the pulley wheel and connects with flexible cable. To this is attached the wire brush wheels used for cleaning burs and files. The slot in the rod permits of the brush being securely fastened. Price, $6.00.

ENGINE PULLEY HEAD,

With Adjustable Bearings.

Catalogue No. 34.

This Pulley Head is of the same general construction as above, but has the improvement of adjustable bearings, which can be regulated to a nicety. Price, $7.00.

ENGINE ARM SUPPORT, STYLE A.

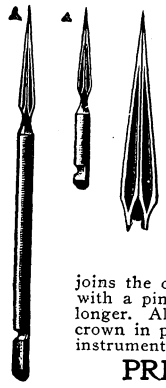
Catalogue No. 40.

Made of Heavy Coiled Wire, nickel-plated; fits neatly over sheath, and prevents breaking cable at the pulley head. Illustration two-thirds actual size. Price, 50 cents.

ENGINE ARM SUPPORT, STYLE B.

Catalogue No. 41.

The tapered flat spiral spring yields gradually to the weight of the arm and prevents injury to the cable. Illustration two-thirds actual size. Price, $1.00.



PULP-CANAL REAMER

Devised by Dr. J. Leon Williams

In describing this instrument Dr. Williams says: "It is a modification of the three-sided reamer, but the modification is much the most important feature of the tool. Each of the three sides is deeply grooved. The result of this grooving is two-fold. It makes an instrument which is as easily sharpened as an excavator, and which can, therefore, be kept in the finest cutting condition until worn out. The grooves also render the tool self-clearing. It never clogs, it cuts very rapidly, and there is not the slightest danger of forcing it th ough the side or end of the root. It leaves roots which have a curvature at the end in the best possible condition for treatment with sulphuric acid or by any other method, i. e., with a large cone-shaped opening giving an abundance of room for working and seeing. It cuts away more of the infected dentine with less destruction of the root than can be accomplished by the use of any other instrument. And, finally, it leaves the root canal exactly the shape required for the strongest and best form of pin for crown work—a pin which is largest and strongest where it joins the crown and which gradually tapers to a fine point in the end of the root. Crowns with a pin of this shape are much less liable to get loose because the pin can be made much longer. Also, one never finds an air cushion beneath a pin of this shape when cementing a crown in place. From every point of view, therefore, I regard this as much the most valuable instrument for opening pulp canals that I have ever used."

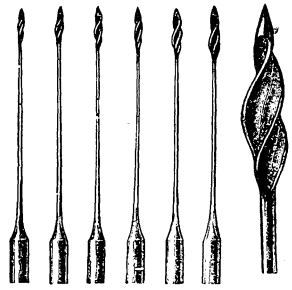
PRICE, EACH - - - - - - - 60 CENTS

THE BRYANT NERVE CANAL DRILL.

(*Patented.*)

Catalogue No. 52.

The following is Dr. Bryant's statement concerning his drills:



To the Profession:—While other canal drills are formed to resemble a cone or bud shape, having the greatest resistance at the base of the drill head, causing them to bind and choke up in the canal, and requiring so much forward pressure to enter the canal as to greatly increase the liability of twisting or breaking off the blades, we offer a canal drill based strictly on a mechanical principle, viz., a cone base to base.

This drill being thus shaped meets the greatest resistance at the center of the drill head, the cutting blade gradually increasing in width and increasing in thickness from the non-cutting or safety point to the center of the drill head, then, gradually decreasing in width and decreasing in thickness, to the base of the drill head; allowing the point of greatest resistance to come on the cutting-blades at the center of the drill head where they are strongest, which enables the drill to enter the canal so evenly and rapidly that it requires about one-third of the forward pressure to enter a canal that is required of other drills.

These drills are especially designed to facilitate the operator in preparing all dead teeth and roots of teeth valuable for the retention of porcelain crowns, bridge work, etc., which becomes so laborious and unsuccessful with other drills.

Our testimonials endorse all we claim for this drill, viz., a ready follower, a rapid cutter, complete ease of penetration, positively will not clog up in the canal, throwing all canal contents directly backward and down the canal; when dull, can be sharpened by running a fine emery disk on the cutting blades with a dental engine; they are made with a requisite size shank to insure strength for all work called upon, with enough flexibility of shank to properly follow and cut tortuous canals. They comprise a set of six numbers in straight drills for use in the canals of the upper teeth, also a set of six numbers to be used in the right-angle attachment for the canals of the lower teeth.

In preparing the canals of the different teeth we advise the use of several numbers, especially so in the canals of lateral, bicuspid and molar teeth. Their perfect adaptation and durability with the ease of their rapid cutting, the saving of time and labor to the operator, with assured success in all operations for which they are designed, without that constant dread of breaking or twisting off in the canal, will commend them to all conscientious and progressive operators for a trial.

Your patients will pay you a good price to save a dead tooth, or a root that is valuable for capping or crowning, even any method proposed by you to escape extraction. If you have had failures with other drills, try these and be assured of success, and success means the gratitude of your patient with a greater income to yourself.

My experience teaches that no part of dentistry will advertise your fame so largely and thoroughly as successful operations which, in saving extraction, promote the continued use of the natural teeth.

CHAS. H. BRYANT.

PRICE, EACH, 50 CENTS.

MECHANICAL FORCEPS.

No. 644 Plate Punch. Price $2.00

No. 645
Improved Plate Punch
Price, $3.00

No. 647
Chamber Nipper
Price, $2.00

MECHANICAL FORCEPS

No. 648

Upper Plate Bender. Price, $2.00

No. 649

Lower Plate Bender. Price, $2.00

No. 652

Dr. A. S. Richmond's Perforating Forceps. Price, $2.50

Loop Punch. Price, $2.00

MECHANICAL FORCEPS

No. 646

A B C

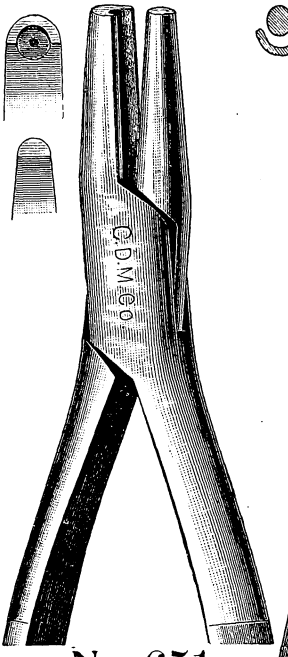
Plate Nipper

No. 646 A. Large size

No. 646 B. Medium size

No. 646 C. Small size

Price, each, $2.00



No. 651

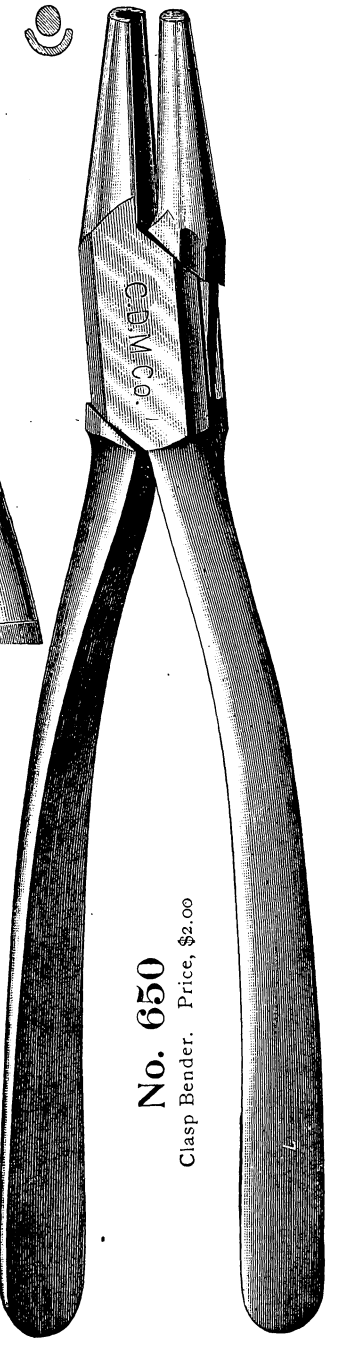
Clasp Bender

Dr.

H. J. McKellop's

Pattern

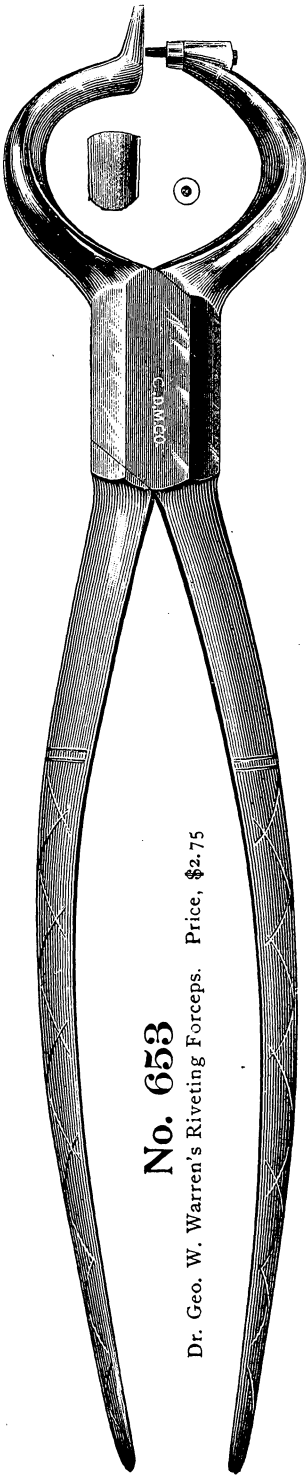
Price, $2.00



No. 650

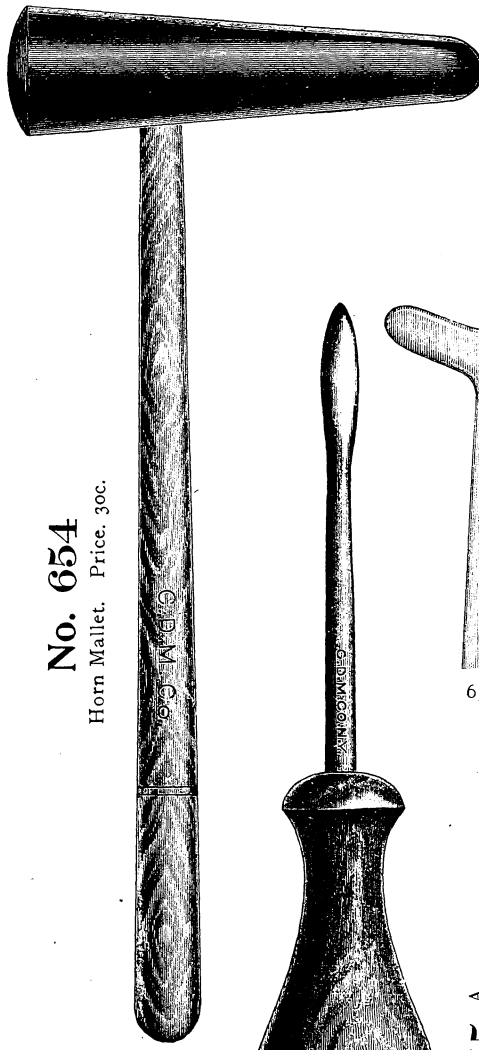
Clasp Bender. Price, $2.00

MECHANICAL FORCEPS



No. 653

Dr. Geo. W. Warren's Riveting Forceps. Price, $2.75



No. 654

Horn Mallet. Price. 30c.

655 B

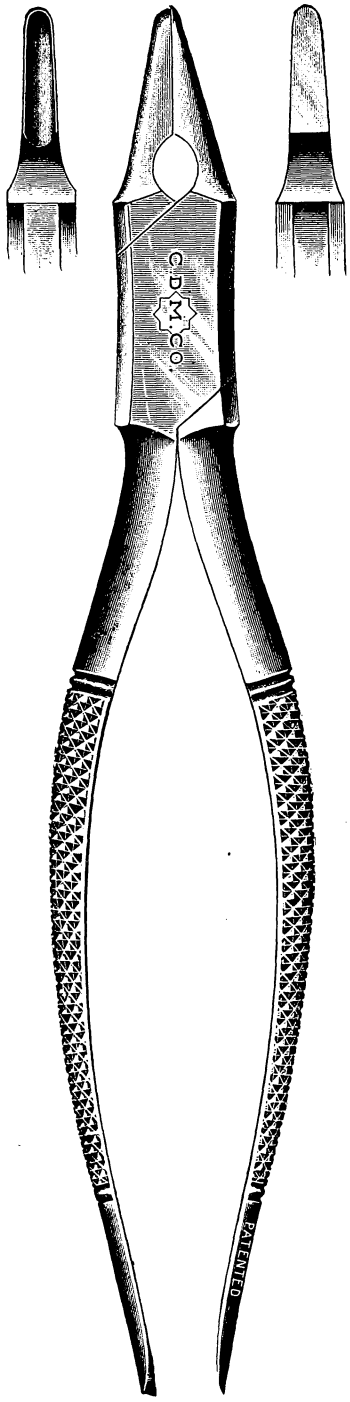
655 A

No. 655 A B

Plate Burnishers

No. 655 A. Price, 50c.

No. 655 B. Price, 75c.



THE

Clement Alveoli Amputating Forceps

Patented August 5, 1898.

This forceps, designed and patented by Dr. Geo. B. Clement, of Macon, Miss., is intended for cutting off and trimming to a smooth surface the projecting alveoli made prominent by the intervening septum, after extraction of teeth and preparatory to the insertion of artificial dentures.

The inventor claims superior advantages for trimming any and all parts of the alveoli wall from tuberosity to tuberosity above and from ramus to ramus below. It will lessen pain, soreness, and discomfort to patient. It will shorten time from extraction to insertion from two to six months with better results. It will prepare the alveoli just as desired, removing all prominence and make a smooth, solid surface upon which to mount the teeth. It will prevent undue absorption and will assist in removing troublesome fangs.

The following resolution was passed by the Annual Meeting of the Mississippi Dental Association, held at Macon, Miss., April 3, 1898:

RESOLVED, That the Clement Alveolar Forceps is of new and original design, having for its object the removal after extraction of teeth, of all irregular and jagged portions of the alveolar process, leaving a smooth, rounded surface, thereby promoting rapid healing of the soft tissues, preventing excessive inflammation and consequent undue absorption of bone and materially lessening the time of waiting for insertion of dentures.

RESOLVED, That a copy of these resolutions be presented to Dr. Clement in token of endorsement of this Association.

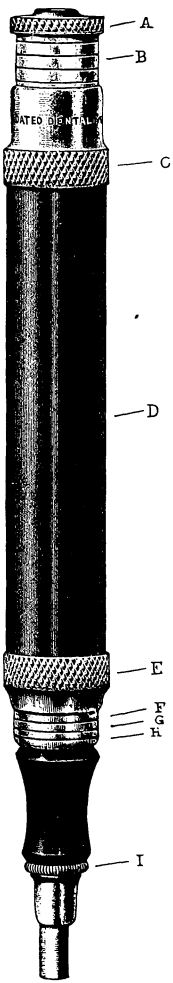
J. P. WRIGHT, Pres
J. D. WISE, Clinic Comm.

The Forceps is exceptionally well made of best steel, handsomely nickel-plated, and is guaranteed against defect of any kind.

Price, $3.00.

The "Perfect" Automatic Mallet

HAVING A VARIABLE STROKE WITH A VISIBLE ADJUSTMENT.



The movement of the socket-piece of this instrument can be varied, and the fall of its hammer can thereby be adjusted to either one-twelfth, one-eighth or one-sixth of an inch, at the pleasure of the operator. The parts are rigidly held, when adjusted, by the knurled ferrule E. The adjustment of the instrument is shown by the scores F, G, H. If F is barely in sight at the edge of the ferrule E, the instrument will have its longest stroke, and the hammer will be lifted one-sixth of an inch. To lessen the lift of the hammer, loosen the ferrule E from its bearing against the tubular portion, D, grasp the smaller section at I, and screw it into the section D until one of the scores G, H, is brought to the edge of F. Then tighten E against D.

By screwing the smaller section of the case, I, in or out a little, the amount of "slack" or distance which the spring catch passes by the hammer catch to insure its engagement, can be adjusted. In this instrument, the "slack" can be made more or less, to suit the ideas of its user.

The force of the spring which actuates the hammer is regulated by the screw cap A, which is screwed into the section D to increase the force of the blows. It is held securely, when adjusted, by the knurled ferrule C; the force of the blow being estimated by the number of the scores B which are exposed. The more of them there are in sight, the lighter will be the blow.

TO ASSEMBLE THE INSTRUMENT.

Put in the hammer, large end first, then its spring, and screw on the cap A. Hold the case, or large section of the instrument containing the hammer, in one hand, with the side-screw up. Take the smaller section, or nose-piece, in the other hand, with the threaded part resting upon the tips of the fore and middle fingers, the thumb upon the butt of the spring catch, and the socket end in the palm of the hand. Keep the spring catch in line with the screw head on the side of the case, and it will enter the groove in the hammer. Rotate the nose-piece slightly, and push it in as far as it will go, and screw the two sections of the case together while holding it there.

In oiling the instrument, use none but the finest oil; our Champion Dental Engine Oil is recommended. Thick, heavy oils, or those which become gummy, will interfere with the proper working of the instrument. Only a small quantity of oil is required.

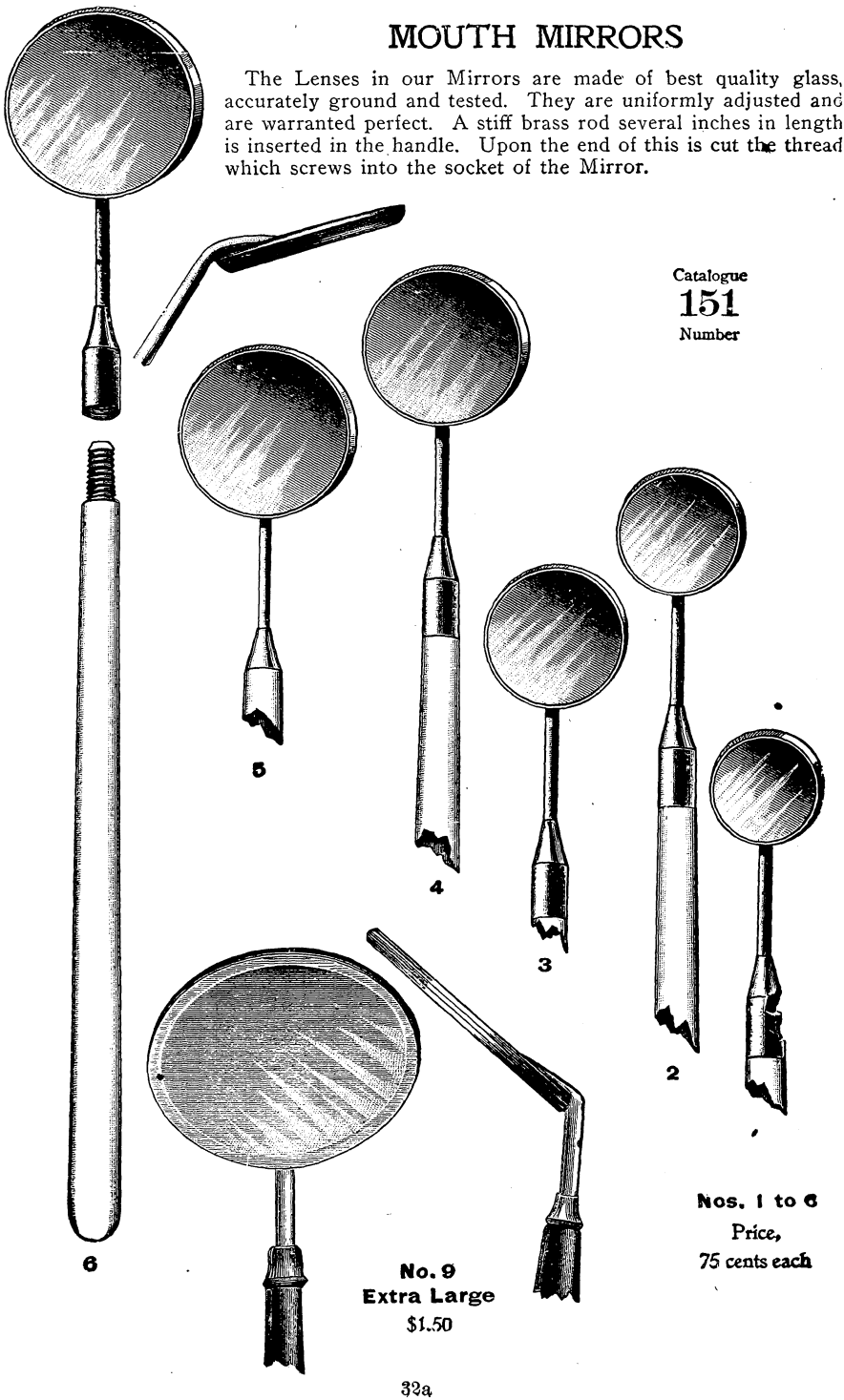
The workmanship and finish of "Perfect" Mallet is what its name implies. The outer casing is of hard rubber, and the metal parts of the casing are nickel plated.

Price..... $5.00.

MOUTH MIRRORS

The Lenses in our Mirrors are made of best quality glass, accurately ground and tested. They are uniformly adjusted and are warranted perfect. A stiff brass rod several inches in length is inserted in the handle. Upon the end of this is cut the thread which screws into the socket of the Mirror.

Catalogue
151
Number



Nos. 1 to 6
Price,
75 cents each

German Fused Oxide

The Best Cement For Setting Crowns

The glue-like adhesiveness and ease of manipulation that characterize this celebrated German Fused Oxide, render its superiority, for attaching crowns, unquestionable. It is smooth, very easily worked, and does not crystallize.

German Fused Oxide is furnished in two-bottle packages, with choice of either yellow or grey powder, at the price of One Dollar.

Best for Filling Teeth

The best cement for filling teeth. It is very adhesive and seals the tubuli against bacteria-laden secretions. It practically becomes a part of the tooth. Its thorough insolubility prevents its dissolution by the secretions of the mouth; and it exhibits such a remarkable degree of hardness that it has been said to compare favorably to tooth substance itself. Being mixed thoroughly with its peculiar porcelain-like paste, it gives the hardest and most durable plug.

The "Plastic Porcelain" Cement is sold in full size packages (containing two bottles of powder and one bottle of paste) for $2.00. It is also sold in packages at $1.50, and a sample package can be had for $1.00.

DENTAL WAX PREPARATIONS.

GUTTAPERCHA AND WAX.

FOR BASE PLATES, BITES AND IMPRESSIONS.

It would be very easy to cheapen the cost of our Guttapercha Wax by reducing the proportion of guttapercha it contains. But in our wax preparations, as in all of our other products, it is our ambition to give a little bit "more quality" than any other manufacturer. That's one of the reasons why we put so much guttapercha into this wax preparation. It is put up in ½-lb boxes. Price, $1.00 per lb; 50 cents a box.

STICKY WAX.

For putting impressions together, mending plaster casts, sticking teeth to the plate, especially in metal work.

TRADE MARK.

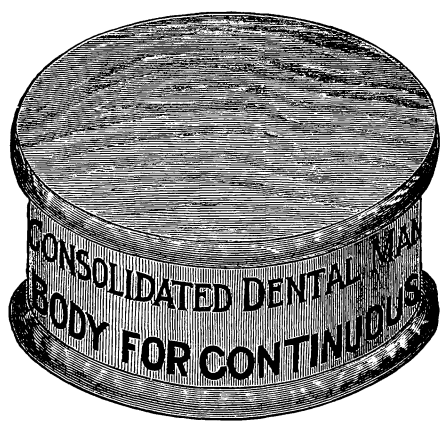
Mending rubber dam, sticking it to the tooth or gum, for attaching the porcelain to the gold in crown and bridge work, etc., etc.

Prepared by CONSOLIDATED DENTAL MFG. CO.

New York. Boston. Brooklyn. Chicago. Philadelphia. Atlanta. New Orleans. Baltimore. Providence.

This wax is in the form of round sticks of convenient size and form for the purpose intended. Price per box, 35 cents.

CONTINUOUS GUM BODY AND ENAMEL.



For beautiful shade and superior texture this material is recommended by the most prominent practitioners. Put up in neat hard wood boxes. Price, $1.25.

John H. Meyer, D.D.S., who has had over thirty years' experience in porcelain work and lecturer on continuous gum work at the Baltimore College of Dental Surgery, also at the New York Dental School, says:

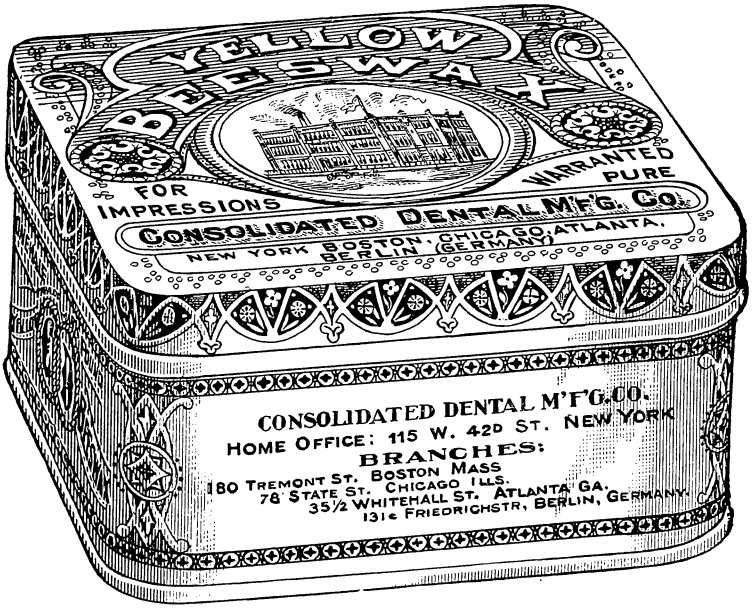
Consolidated Dental Mfg. Co.

Gentlemen:—I have used your Continuous Gum Body and Enamel, and wish to say that in point of shade, texture and all other respects, I consider it equalled by none in the market.

JOHN H. MEYER.

DENTAL WAX PREPARATIONS.

YELLOW BEESWAX FOR IMPRESSIONS.



Put up in ½-lb enamelled tin boxes. Price per lb, 76 cents; per box, 38 cents.

YELLOW PARAFFIN AND WAX.

FOR BASE PLATES, BITES AND IMPRESSIONS.

Contains just the right proportions of paraffin and pure beeswax; is extremely tough and liked by all who use it. Made in sheets 5⅛ in. by 2¾ in. Put up in ½-lb boxes; $1.00 per lb; 50 cents a box.

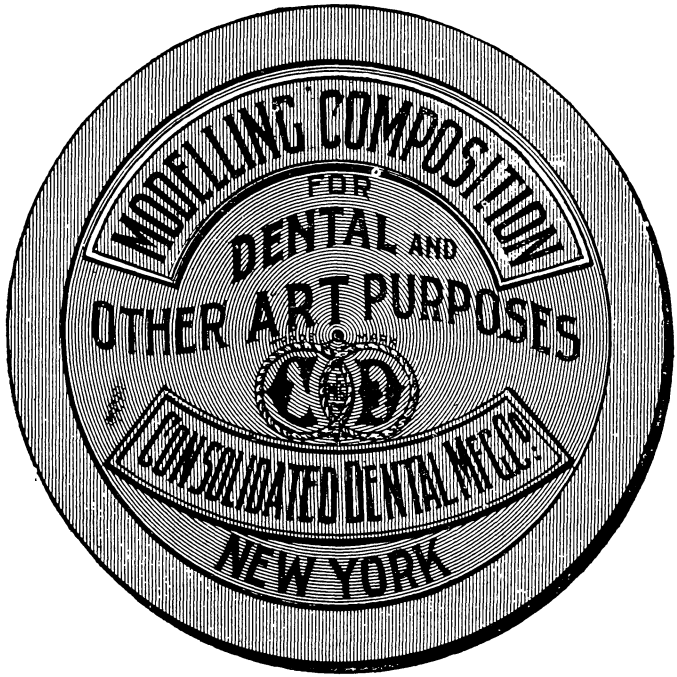
EXTRA TOUGH PINK PARAFFIN AND WAX.

FOR TRIAL PLATES.

Many brands of Pink Wax are rendered brittle by the incorporation of coloring material. This is not true of our wax. It is, in fact, as tough as our Yellow Wax, notwithstanding its rich pink shade. Put up, same size sheets and boxes as Yellow Wax. Price per lb, $1.00; 50 cents a box.

Cut to pattern, per box, 45 cents.

WITHOUT A PEER.



Catalogue No. 560.

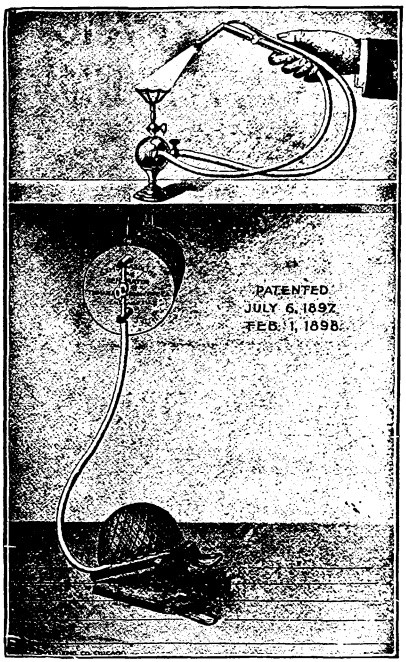
It is a fact, becoming universally known, that whenever an article bears the name or trade-mark of Consolidated Dental Mfg. Co., its dental integrity is thereby established. It is our cardinal principle to advertise our business by the quality of our wares. It is our ambition to produce, not in a single line only, but in all of our products, a quality which will distinguish them from preparations of unscrupulous manufacturers. That we have realized our ambition in the case of Dental Modeling Composition, is a matter of history. We have succeeded in producing a compound that is adapted to use in dentistry most satisfactorily. We are even informed that its improved quality renders it even more serviceable for the other arts. It is free from the sticky properties which characterize many compounds of similar name, and does not shrink or expand after the impression has been taken.

The No. 2 is most universally used, being of medium flexibility, neither yielding too easily to pressure nor too firm in resisting.

The No. 1, or very soft grade, is used for restoring composition that may have become hard by frequent use; the restoration being accomplished by heating in hot water.

In very warm weather the No. 3, or hard grade, can be used advantageously.

Our Modeling Composition is put up in half-pound enameled tin boxes, and to avoid possible mistake, each of the cakes bears our name and trade-mark. Price, per pound 75 cents; by mail, 8 cents per half-pound box extra for postage.



THE SAMS' COMBINATION BLOW-PIPE OUTFIT

(IMPROVED)

Will flow your Bridge quickly and smoothly—give your work a perfect finish and leave it free from discoloration. Does all soldering work and many other things better than they can be done with any other outfit or in any other way. BURNS GASOLINE. Heat always just what is needed. Blaze can always be relied upon. No smoke, absolutely NON-BLOW-OUT. THE SAMS' OUTFIT SATISFIES IN EVERY WAY.

Price Complete.....$14.50
Without Foot Blower. 10.50

FOR SALE BY CONSOLIDATED DENTAL MFG. CO.

TESTIMONIALS

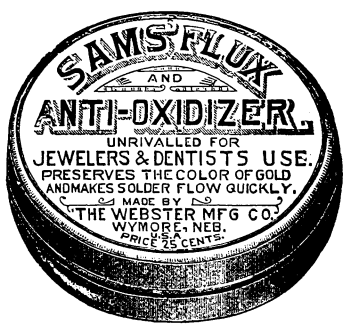
Lubec, Me., Feb. 3, 1899.

The Sams' Combination Blow-pipe Outfit is satisfactory in *every* way. I am very much pleased with it, and have never had a moment's annoyance from it since it arrived. I have had more or less dealing with nearly all of the blow-pipes of this nature (Gasoline), but "SAMS" in my opinion is a class by itself. W. G. FANNING, D. D. S.

New Roads, La., Feb. 7, 1899.

I am pleased to say that my SAMS' COMBINATION BLOW-PIPE OUTFIT is giving entire satisfaction. It is a blessing to the country dentist. I have worked in Chicago and other cities where gas was available and used it, but worked with no better success than I now do in this small town with your splendid outfit. It is neat in appearance and perfect in construction, nothing to wear out or get out of order. I recommend it to the profession at large.

A. P. FILLASTRE, M. D., D. D. S.



Hastings, Neb., Dec. 14, 1898.

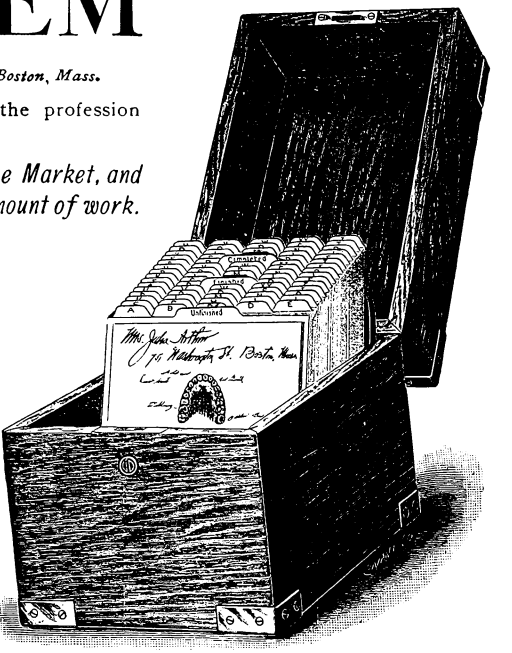
I am using Sams' Flux and Anti-Oxidizer and cannot say too much in its favor. I would not think of trying to do bridge work without it. C. E. DOUGLASS.

Try a box of our SAMS' FLUX AND ANTI-OXIDIZER. It will please you. 25 cents a box at your dealers, or sent by us, postpaid, upon receipt of price.

The TRIGGS SYSTEM of DENTAL CHARTS.

Pronounced by leading members of the profession to be the

Most Complete System now on the Market, and absolutely correct with minimum amount of work.



Simple,

Compact,

Inexpensive.

No Ledger, No Cash, No Journal.

PRICES, $5.00, $8.00, $10.00 and $12.00.

No posting of old charges or memoranda. You have every thing on one chart, no matter how much or how little work was performed, and if done in one day or five years ago. You can, with this system, put your finger upon any patient's chart, *in one minute*, and on that chart you have the number of appointments, times, fees, etc., when and how the account was paid, and every cavity marked, just as in the patient's mouth.

Cases contain 300 Charts, 3 sets of Indexes and Cash Account Cards, are handsome and well made, and have lock and two keys. Write for samples and further information.

THE TRIGGS' SYSTEM OF DENTAL CHARTS may be ordered from the Consolidated Dental Mfg. Co., Sole Agent, at its home office, No. 115 W. 42d St., New York, from its branch houses in Boston, Providence, Brooklyn, Buffalo, Philadelphia, Baltimore, Atlanta, Chicago, New Orleans, and from any of the Company's agencies throughout the U. S. and Canada, and foreign countries.

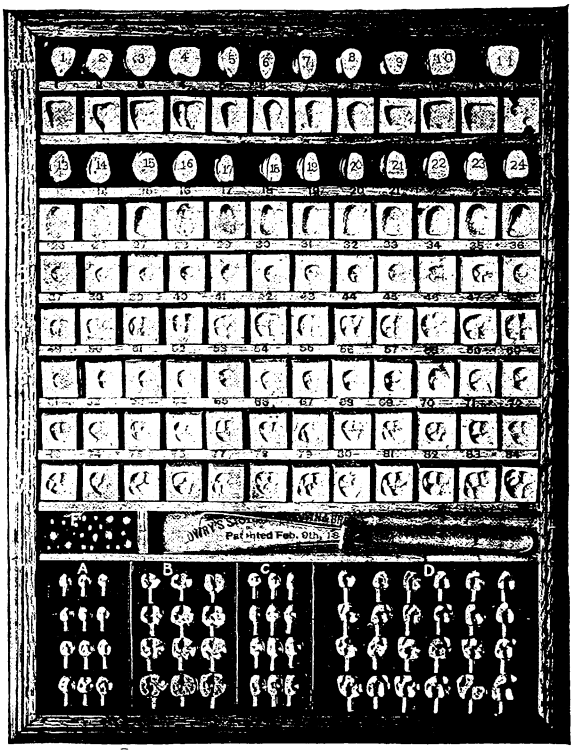
Writing from Marshall, Texas, Nov. 3, 1898, Dr. LINDLEY H. HENLEY says:—

"I have nearly all of "the crown and bridge "systems here in my "office at present, in- "cluding the . . . . . and "the . . . . . and others; "and can say that the

Lowry System

"is by far the best and "most complete machine

For Crown and Bridge Work



"I have yet seen. At first I did not see through it, but now I "do and shall use no other in the future."

Prominent Practitioners Everywhere

Have referred to the LOWRY SYSTEM in the highest terms of praise. Its marvellous simplicity, together with the perfection of its several parts, has placed it far in advance of all the various outfits for similar work yet to be had.

The price of the complete system, including all dies and counter-dies, trial caps, soldering plyer and stamper, in suitable case, is $20.

Dentists can obtain the Lowry System from the home office or any of the branch houses of the Consolidated Dental Mfg. Co., who is sole agent for its sale. Or it can be ordered through any of the numerous agencies of the Company in the United States, Canada, Mexico, or the Company's correspondents in foreign countries.

A handsome booklet, describing the outfit in detail, with suitable illustrations, forwarded upon request.

WANTS, FOR SALE ETC.

NOTE.—Rate for advertising in this department of ITEMS OF INTEREST is ten cents per word, including captions, "Wanted," "For Sale," etc., and address. Initials charged as words. Advertisements should reach us by the 20th of each month to insure insertion in the following month's issue, and are payable in advance.

CONSOLIDATED DENTAL MFG. CO., Publishers, 115 W. 42d St., New York, N. Y.

1199—WANTED.—A good all around man, registered in New Jersey; a good steady position for the right man. Address "POSITION," care of "Items of Interest," 115 W. 42d St., New York.

1200—FOR SALE.—Practice and modern office equipments in thriving New Jersey town; cheap for cash. Address "BARGAIN," care of Consolidated Dental Mfg. Co., 1413 Filbert St., Philadelphia, Pa.

1201—FOR SALE.—Practice, ten years old; office and dental outfit complete; rent, $18.00 month; doing over $400 the month; best location in city of 60,000 (Jersey); selling for what it will invoice. Address "1201," care of "Items of Interest," 115 W. 42d St., New York.

1202—FOR SALE.—$300 cash takes fine outfit and all; town 3,000 inhabitants; only one competitor; write if you mean business. Address "GOOD CHANCE," Box 371, Virden, Ill.

1203—TO SELL.—Beautiful dental office, complete; only $250 cash. Address "G. J. FORD," Talbotton, Ga.

1204—GOOD mechanical expert; post-graduate; diploma; wants situation. Address "1204," care of "Items of Interest," 115 W. 42d St., New York.

1205—WANTED.—Copy Kingsley's Oral Deformative. Dr. "F. W. FRANKLIN," Kansas City, Mo.

1206—FOR SALE.—Complete set dental office and laboratory fixtures. Address "WALTER F. HAYHURST," Lambertville, N. J.

1207—WANTED.—Good location in Jersey; will buy practice and fixtures. Address "1207," care of "Items of Interest," 115 W. 42d St., New York.

1208—FOR SALE.—Established practice of 14 years at a bargain, in the largest city of the Shenandoah valley. Address "DENTIST," Box 277, Winchester, Va.

1209—FOR SALE.—$2,500 cash practice for $1,000; no opposition; established 12 years; will introduce purchaser; prettiest town in Rocky Mountains; 4,000; health resort; gold mining; terms right; a snap. Address "1209," care of "Items of Interest," 115 W. 42d St., New York.

1210—FOR SALE.—High-grade advertising office; population 250,000; three chairs; everything first-class; best business in city; $600 to $800 per month cash; price, $2,000; do not answer unless you have money. Address "SNAP," care of Gideon Sibley, Dental Depot, Chicago, Ill.

1211—WANTED.—100 all around operators for all sections of the country; also laboratory men; steady positions and good salaries. "NEW ENGLAND DENTAL AGENCY," Hartford, Conn.

1212—FOR SALE.—Fine cash practice; great bargain. Address "CLIMATE," care of "Items of Interest," 115 W. 42d St., New York.

1213—FOR SALE.—Ten years' practice and outfit for less than invoice; splendid college town in Iowa; investigate. Address "POOR HEALTH," care of Consolidated Dental Mfg. Co., 78 State St., Chicago, Ill.

1214—FOR SALE.—First-class dental office in Toledo, O.; established 12 years; best location in city. Address "1214," care of Items of Interest," 115 W. 42d St., New York.

1215—FOR SALE.—Advertising office; New York City; clearing $5,000 yearly; thorough investigation invited. Address "ILL HEALTH," care of "Items of Interest," 115 W. 42d St., New York.

1216—WANTED.—Position as operator by lady dentist; graduate of U. of M.; experience and references. Address "1217," care of "Items of Interest," 115 W. 42d St., New York.

1217—WANTED.—Position with reputable dentist; experienced operator; age, 28: New York State license. Address "AMERICAN," care of "Items of Interest," 115 W. 42d St., New York.

1218—WANTED.—Position by recent graduate; age, 28; good appearance; fair operator; $15 to start. Address "EXTRACTOR," Winchester, Mass.

☞ See following page

Wants, For Sale, Etc.—*Continued.*

1219—FOR SALE.—An old established practice and outfit in live Pennsylvania town of 5,000 inhabitants; best of reasons for selling. Address "1219," care of "Items of Interest," 115 W. 42d St., New York.

1220—FOR SALE.—Dental outfit and practice, New York City; rare chance; must be sold. Address "1220," care of "Items of Interest," 115 W. 42d St., New York.

1221—WANTED.—Position by graduate; several years' experience. Address "BROWN," Southern Dental Supply Co., Washington, D. C.

1222—FOR SALE.—Eastern Pennsylvania office and practice; established eleven years; splendid opening for college graduate. Address "1222," care of Consolidated Dental Mfg. Co., 1413 Filbert St., Philadelphia, Pa.

1223—FOR SALE.—In Central Ohio; town 800, on railroad; 5 other towns to draw from; over $1,200 per year; invoice $600; will sell for less as a whole or in part to suit purchaser; rare chance. Apply to "COGSWELL DENTAL SUPPLY CO.," 29 Euclid Ave., Cleveland, O.

1224—WANTED.—Position by man of 12 years' experience. Address "MINNESOTA," care of "Items of Interest," 115 W. Forty-second St., New York.

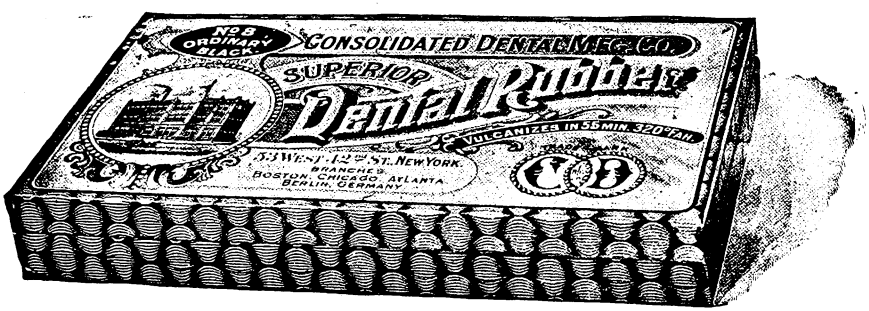
1225—WANTED.—Mechanic to take charge of laboratory; expert at impressions and setting up; must be first-class talker, able to get good prices; no packing or finishing; skill, sobriety and good address indispensable; high salary and permanent position. Address, giving full particulars, "1225," care of "Items of Interest," 115 W. Forty-second St., New York.

1226—WANTED.—Position by experienced graduate as assistant in Philadelphia, or would purchase an established practice. Address "1226," care of Consolidated Dental Mfg. Co., 1413 Filbert St., Philadelphia, Pa.

1227—FOR SALE.—The best bargain in an advertising office in the United States; $5,000 cash; balance on time. Address "G. L. STONE," Denver, Colo.

WANTED.—February, 1899, numbers "Items of Interest;" publishers will pay 15 cents per copy for same received in first-class condition.

No. 578.



We make only one grade of Consolidated Dental Rubber—and that grade is the best grade. We make the following varieties of colors, and indicate them by numbers:

No. 1, Light Orange.	**No. 2, Medium Orange.**	**No. 3, Dark Orange.**	**No. 4, Mottled (Light Red).**
No. 5, Mottled (Dark Red).	**No. 6, Maroon.**	**No. 7, Jet Black.**	**No. 8, Ordinary Black.**
No. 9, Light Pink.	**No. 10, Medium Pink.**	**No. 11, Dark Pink.**	**No. 12, Weighted (Heavy).**

No. 13, Weighted (Light).

PRICES.

Nos. 1, 2, 3, 4, 5, 6, 7, 8	**per pound,**	**$2**	**25**
Nos. 12 and 13	" "	**3**	**00**
Nos. 9, 10 and 11	" "	**4**	**50**
Perfection Pink	" "	**6**	**00**

If sent by Mail, 16 cents *per pound* extra to pay postage.

A, Motor.

B, Speed regulator.

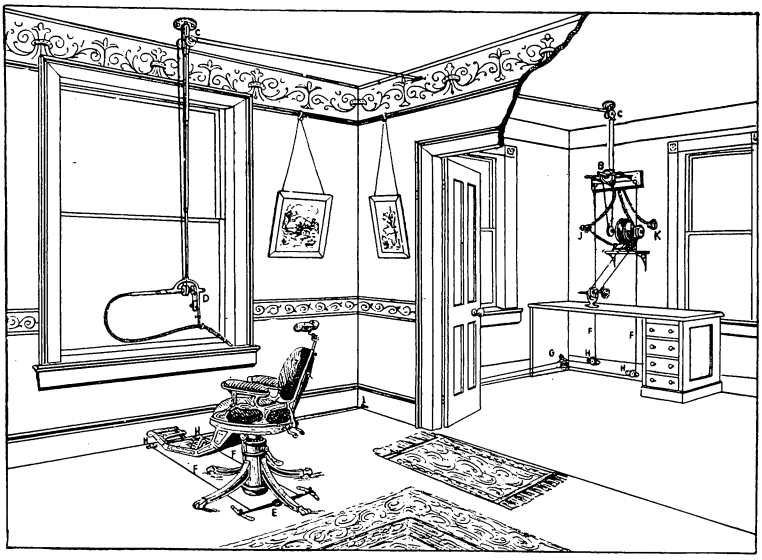
CC, Ceiling pulleys, and pulleys on bracket.

D, Engine head.

E, Foot switch.

FFFF, Wire connecting foot switch and speed regulator.

HHHH and G, carrier pulleys for foot switch wire.



DOCTOR, COUNT THE COST.

1 Electric Motor, 110 volts, direct current to run your lathe and at same time run your engine	$30.00
1 Speed regulator and reverser, that enables you to control the speed of your engine and reverse it at will	15.00
1 Ceiling Bracket that will hold your engine in any position that you may wish	10.00
1 pair of Ceiling Pulleys, that are noiseless and require no attention for months at a time	3.50
1 Engine head combined with air pump and a rapid pneumatic mallet	25.00
1 Cable, sleeve, flexible attachment and coil spring	5.25
1 Handpiece	10.00
1 Flexible steel spring arm-support	1.00
100 feet of engine cord	1.00
Total	$100.75

If you have any of the parts listed above and wish to use them, deduct those items and order the balance. If your power is to be derived from an alternating current motor or a water motor, the change in cost or arrangement will be in the motor only. Deduct cost of above mentioned motor and add cost of such motor as you may wish to use. You will get double service from your motor, and a very practical and convenient engine.

The cut will show you the ordinary arrangement of outfit.

L. J. MASON & CO.,

MANUFACTURERS OF

Dental Engines,
Speed Regulators and Reversing Attachments,
Ceiling Brackets, Ceiling Pulleys,
Pneumatic Mallets. FOR FOOT, ELECTRIC, OR WATER POWER.

FORMULA INSTRUMENTS AND SPECIAL APPLIANCES.

108 and 110 East Randolph St., Chicago, Ills.

A REVOLUTION

IN THE PRICE OF FOUNTAIN SPITTOONS.

NO MORE MIDDLEMEN'S PROFITS—
NO MORE AGENTS' COMMISSIONS—

Has brought so many orders that we are compelled to continue another 30 days.

DIRECT FROM MAKER TO USER.

FOR.....

30 DAYS

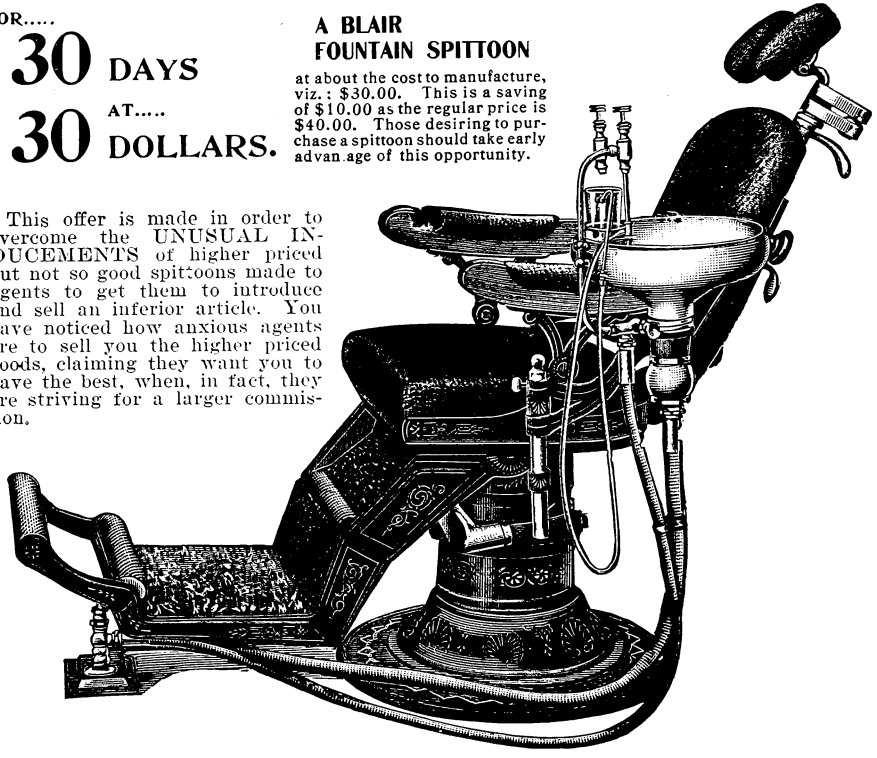
AT.....

30 DOLLARS.

A BLAIR FOUNTAIN SPITTOON

at about the cost to manufacture, viz.: $30.00. This is a saving of $10.00 as the regular price is $40.00. Those desiring to purchase a spittoon should take early advantage of this opportunity.

This offer is made in order to overcome the UNUSUAL INDUCEMENTS of higher priced but not so good spittoons made to agents to get them to introduce and sell an inferior article. You have noticed how anxious agents are to sell you the higher priced goods, claiming they want you to have the best, when, in fact, they are striving for a larger commission.



ELLIOTT & CO.,
Dental Depot,
EDINBURGH, SCOTLAND.

The Blair Fountain Spittoon Co.

GENTLEMEN:—The Spittoon you sent to our customer J. W. Lloyd, of Liverpool, has given him so much satisfaction that he wants one now for his branch office in Cheshire, England.

Respectfully yours,

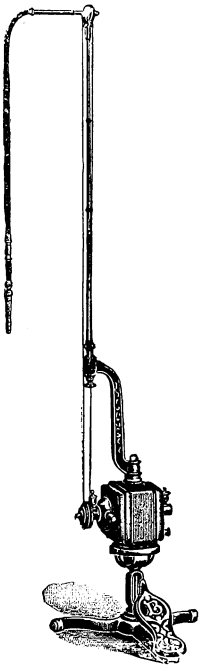
ELLIOTT & CO.

THE BLAIR FOUNTAIN SPITTOON CO.,

Send for ..... Illustrated Catalogue.

410 West Chestnut St., Louisville, Ky.

Ha, Ha, Didn't We Tell You So!



THE whole dental world wanted AN ENGINE THAT COULD PULL SOMETHING. Got tired of these weak-kneed kind. Well, we made it and here we are, night and day, making them, and dentists falling all over each other to get them. There's a large eastern supply house of New York, sent in a large order the other day, and are jumping up and down, yelling "Hurry! hurry!! hurry!!!" because they are losing money every day they don't have them.

AN ENGINE THAT CAN PULL is what everybody wants, and here she is.

USUAL CIRCULARS.

BERRY DENTAL MFG. CO.,
421 Milwaukee St., MILWAUKEE, WIS.

THE BEST EVER!

DUNCAN'S

Adjustable Folding Dental Chair.

Can be carried in the hand or packed in a trunk.

Especially adapted for extracting teeth.
Has Adjustable Back and Head Rest.
Range of Seat, 17 to 28 in.
Weight, 25 Pounds.

Made of Oak Finely Finished. Seat, Head-Rest and Back upholstered in Maroon Plush. Nickel Cuspidor. Adjustable Attachment.

Price Complete,
$15.00

CAN BE PROCURED OF ALL FIRST CLASS DEALERS, OR ADDRESS

Dr. H. E. DUNCAN, Spring Valley, Minn.

TRADE

TERRAPLASTICA

MARK

Dr. J. C. GRAFT'S IMPROVED COMPOUND

A Perfect Impression

Long Sought for by the Dental Profession. Something Entirely New. Just what the Gold Workers are looking for. No more Checked Teeth. Absolute Safety in Soldering Investments. A Complete Investment Soldered as Readily as a Single Tooth. A Metal Cast Direct from the Impression. Finer, Neater and Better Rubber Work. Positively Non-Shrinkable. An Absolute Non-Conductor.

PRICE, PER CAN, . . 25 CENTS.

Dr. J. C. Graft's Superior Base Plate

THE STRONGEST AND THINNEST BASE PLATE ON THE MARKET
PLASTIC AS WAX. RIGID AS METAL

The Base Plate is the color of the Natural Gums, and is especially adapted for making Temporary Sets WITHOUT VULCANIZING.

Will not crack or break under any ordinary conditions, even if dropped upon the floor. It fits perfectly and will not "Curl" nor Soften under the Heat of the Mouth.

For trial plates for taking the bite it is unexcelled. It is used to mount teeth for temporary sets for six months to a year. It does not change its form in the heat of the mouth, but retains its position like a metal plate, neither softening nor losing its shape. If broken it is easily repaired, and when repaired is as strong as ever. Packed in boxes containing twelve sheets.

PRICE, PER BOX, . . 50 CENTS

If you are looking for something good, use ☞

FOR VARNISHING PLASTER IMPRESSIONS

Dr. J. C. Graft's Perfect Impression Varnish : : : : : :

No Soap, Oil or Coloring Matter needed with this preparation in your Laboratory.

No Sediment or Waste; leaves the Model Polished and Hard.

PRICE, PER BOTTLE, . . 25 CENTS

For Sale at all Dental Depots

Manufactured only by...

TERRAPLASTICA MANUFACTURING CO.

Manufacturers of Dr. J. C. Graft's Dental Specialties

5 WEST PARK STREET, NEWARK, N. J., U.S.A.

BUY THE BEST!

Hammond's Fused Oxide Cement

FOR PERMANENT FILLINGS, CROWN AND BRIDGE WORK.

This cement has been on the market for about nine years and will please you. It has no equal for crown and bridge work, holding with a remarkable grip and is unaffected by the varying conditions of the mouth. It does not wash or disintegrate, and for permanent fillings is without a peer. The liquid does not crystallize in any clime. The powder is very fine and mixes smoothly. Last but not least, it is one of the largest packages of cement sold for the money.

In "Items of Interest" for November, 1898, page 811, Dr. E. K. Wedelstaedt, of St. Paul, Minn., in answering certain views expressed by Dr. Clapp, of Boston, gives average results of some tests made with well-known oxyphosphate cements, bought in the open market, as follows:

HAMMOND'S FUSED OXIDE, rolled, malleted	**177**
Ames' Metalloid, rolled, malleted	170
Justi's Insoluble, rolled, malleted	148
Weston's Insoluble, rolled (as per directions accompanying cement)	113
Caulk's, stiff mix	79⅓
Britton's, rolled	57½

Price of Fused Oxide Cement, per package,.....$1.50.
6 packages,.....$8.00,.....12 packages,.....$15.00.

Dr. A. L. Swift, 161 West 71st street, New York City, says of it:
"I have used 'Hammond's Fused Oxide Cement' for several years, and have not a failure to record against it. Recently I have seen fillings I put in the mouth from the first box purchased and found them sound and perfect as when put in."

Hammond's White Gold Alloy

PRICE, $4.00 PER OUNCE.

White Gold Alloy was the outcome of exhaustive experiments and tests made a number of years ago to determine a combination of metals which should produce an alloy to possess great edge strength, permanence of color, integrity of bulk, good working qualities, and withal be an undoubted preserver of teeth. That these points of excellence were accomplished in the highest degree is evidenced by the fact that now, after its constant use for nearly one-tenth of a century by some of the brightest lights of the Dental profession, it retains the high esteem accorded only to an alloy that stands the crucial test of time and proves its superiority over all others.

This Alloy is as true as human accuracy can compound metals, and will be found a perfect metal filling material.

Price: 1 Ounce, $4.00; 5 Ounces, $16.50;
10 Ounces, $30.00.

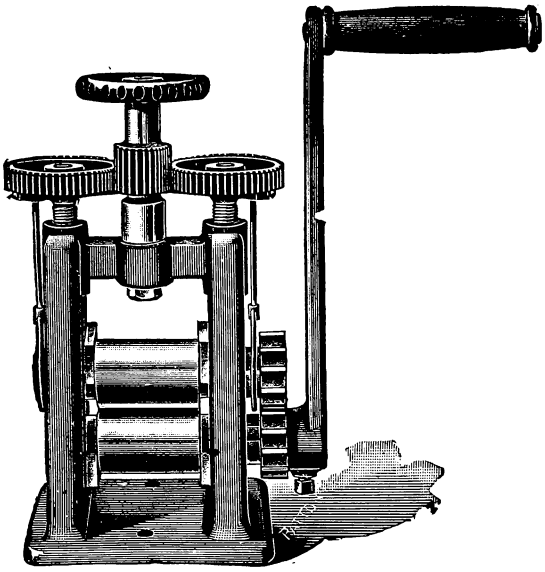
Manufactured by

JOHN F. HAMMOND,

35-43 WEST 125th STREET, NEW YORK.

THE CROWN DENTAL ROLLING MILL

PATENT APPLIED FOR



For some months past our advertisement has appeared in the various dental journals, illustrating our *Crown Dental Rolling Mill*, the only mill that the dentist should use, for the reason that it is the best made, the strongest built, the easiest to work, and the lowest in price, considering the quality, utility and real worth of the machine offered.

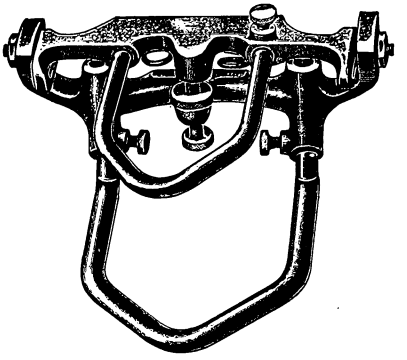
In describing this mill, we will mention that the weight is 45 pounds. *The Rolls*, 2 inches diameter by 3 inches long, are made of the finest crucible steel, hardened, ground, and finely polished; are warranted hard, and free from flaws and soft spots. The gears on the rolls are cut from bar steel, pressure screws are of steel, with geared heads, connecting to the center pinion; one hand operates both screws, at the same time lifting the upper roll by means of our improved device; no springs, and both rolls quickly removed from the frame.

We would be pleased to quote price on application, or you can obtain the mill of any of the leading dental depots in this and other countries.

W. W. OLIVER, Sole Manufacturer,

1487-1489 NIAGARA STREET, - BUFFALO, N. Y., U. S. A.

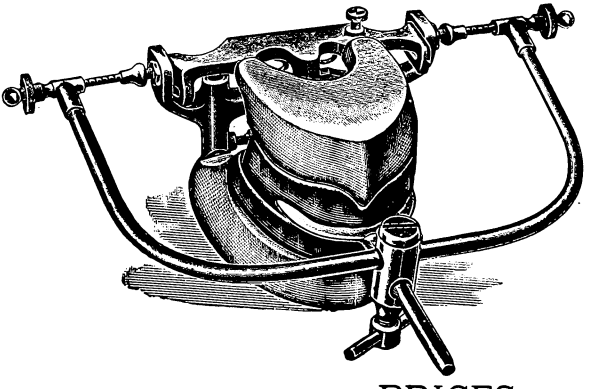
Dr. Gritman's Anatomical Articulator



is a perfect reproduction of the average size and proportion of the human jaws. It gives the movements of the lower jaw, as in mastication, including the average amount of descent of the condyles as they move forwards. It also is capable of downward extension, and will thus accommodate models of unusual thickness. It is furnished with interchangeable model supports, and a number of cases may be in progress at the same time on one articulator. The joints move smoothly and accurately in imitating the various motions of the mandible.

SNOW'S FACE BOW

enables the dentist to place his models in the articulator so that they will occupy the same position, relatively to its joints that the alveolar processes do to the temporo-maxillary articulations. It is fastened to the trial plate, after the bite has been taken and is then applied directly to the patient; and after its adjustment, it is transferred to the articulator; and thus gives, not an average, but the exact position of the model for that particular case, correct in every respect.



PRICES.

Dr. Gritman's Articulator, Not Polished, with one Pair of Model Supports,	**$2.00**
Dr. Gritman's Articulator, Polished and Nickel Plated, One Pair of Model Supports,	**2.75**
Extra Model Supports, per pair,	**.20**
Snow's Face Bow, Polished and Nickel Plated,	**2.00**

Manufactured only by THE SNOW DENTAL CO.,

BUFFALO, N. Y.

Steurer's Plastic Gold. (Improved.)

This is a chemically pure gold in a plastic state, without admixture of any foreign substance, and has been extensively used by dentists at home and abroad for the past eleven years. In its improved form it does not crumble, but when properly annealed works like wax, and denser fillings can be made by hand pressure than with foil by means of a mallet.

It is a great time saver. It will not "ball," but spreads under the plugger and so adapts itself perfectly to the walls of the cavity. Can be used for contour work and will unite with any pure gold.

It is put up in two styles: Small square pieces, in 1-16 oz. vials; Large square pieces, in ⅛ oz. boxes.

Do not be imposed upon by imitations, as this is the only "Plastic Gold in the world" that has kept up its reputation for so many years.

Price per Bottle, 1.16 oz., $2.50
Price per Box, ⅛ oz., 5.00

Cash with all orders. Sold at all Dental Depots.

Steurer's Automatic Annealer and Water Heater.

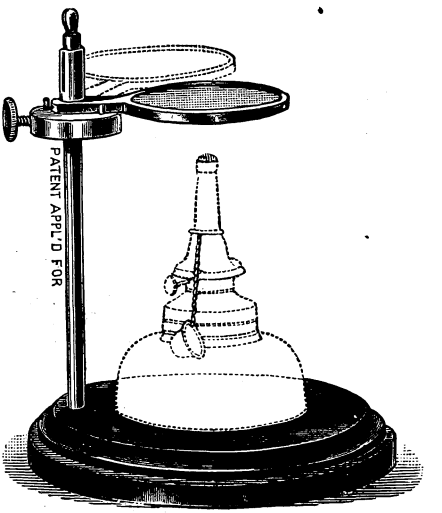
You cannot expect your gold to work well unless it is properly annealed.

As ordinarily done, it is mere guesswork, and is as liable to be wrong as right.

It is wrong to anneal over a naked alcohol flame (as is often done), because it is apt to become contaminated with carbon.

Metal plates get too hot, mica slivers and mixes with the gold. This is all overcome by the use of "Steurer's Automatic Annealer," which always anneals just right, never getting too hot, no matter how long you leave it over the flame. Used with an alcohol lamp. Simple and strong in construction, and no parts to get out of order.

By removing the annealing plate and substituting the aluminum cup, hot water can be obtained in a few moments.



PRICES.

Annealer only, without Lamp, - $2.00
Annealer, with Lamp, - - - 2.30
Annealer, with Lamp and Hot Water Cup 2.50

Sold by all Dental Depots.

Steurer's Artificial Gum Compound.

For making continuous Gum on Rubber, Celluloid, or any of the metal plates without heat or vulcanization. The material is in a fluid state and when dry is as hard as the rubber, being acid and waterproof. The natural gum can be perfectly imitated, and so do away with the unsightly pink rubber.

Put up in 1-oz. bottles with solvent and coloring material. Price, $1.00.

For sale at all dental depots.

DR. J. A. STEURER, 78 West 47th Street, NEW YORK CITY

The Downie Broach.

SOMETHING NEW. DO NOT BREAK.

Any broach or any piece of steel that is barbed or notched is very liable to break. These broaches are not barbed but are made in the form of a screw, which extracts the nerve much better than a barbed broach and will not break. Can be twisted up or tied in a knot without breaking. Made of the toughest steel known. Made to go into a smaller canal than any other broach. Made in regular length without handles, regular length with metal handles, and short with handles, for molars.

Price per half-dozen, ...	$ .75
Price per half-dozen, with handles, . .	1.00

Investment Plaster.

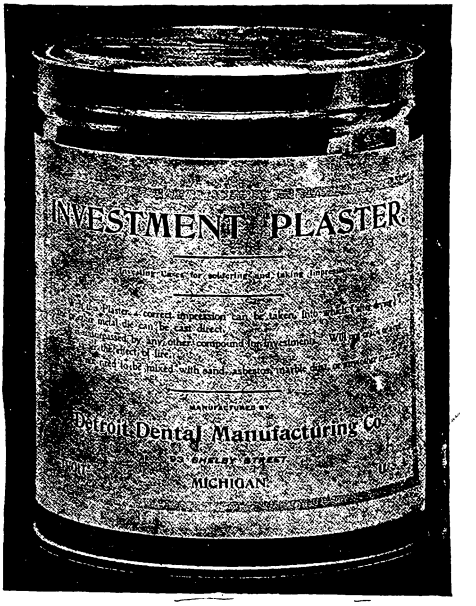
For Investing Cases for Soldering and Taking Impressions.

With this plaster a correct impression can be taken, into which (after drying) a zinc or other metal die can be cast direct.

It is unsurpassed by any other compound for investments for crown and bridge work. Will not crack or even discolor under the effect of fire.

Does not need to be mixed with sand, asbestos, marble dust or any other material.

Price:
10-lb. Can
$1.00



Detroit Dental Manufacturing Co.,

93 Shelby St., DETROIT, MICHIGAN, U. S. A.

New Orleans College of Dentistry,

COR. CARONDELET AND LAFAYETTE STS

FACULTY.

JULES J. SARRAZIN, D. D. S., Dean, Professor of Operative Dentistry, Operative Technics, Dental Prophylaxis.
L. D. ARCHINARD, D. D. S., Professor of Dental Surgery, Oral Pathology, and Therapeutics.
S. R. OLLIPHANT, M. D., Professor of Chemistry, General Materia Medica, Hygiene.
JOHN J. ARCHINARD; A. M., M. D., Professor of Physiology, Microscopical Anatomy, Bacteriology, General Pathology.
H. B. GESSNER, A. M., M. D., Treasurer, Professor of General and Special Anatomy, General and Oral Surgery.
CHAS. ECKHARDT, D. D. S., Professor of Dental Anatomy, Orthodontia, Dental Materia Medica.
C. V. VIGNES, D. D. S., Secretary (637 Canal Street, New Orleans, La.), Professor of Prosthetic Dentistry, Metallurgy, Prosthetic Technics.

SPECIAL LECTURERS.

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JOSEPH BAUER, D. D. S., Prosthetic Dentistry.
C. EDMUND KELLS, D. D. S., X-Ray in Dentistry.
PHIL. J. FRIEDRICHS, D. D. S., Obturators.
MARTIN VIET, D. D. S., Operative Dentistry.
M. R. FISHER, D. D. S., Crown and Bridge Work.
W. E. WALKER, D. D. S., Orthodontia.
OTTO LERCH, A. M., M. D., Ph. D., Physiological Chemistry.
E. B. KRUTTSCHNITT, A. M., LL. D., Dental Jurisprudence.
H. J. FELTUS, D. D. S., Porcelain Dental Art.
A. L. METZ, M. Ph., M. D., Organic Chemistry.

DEMONSTRATORS.

J. P. BAYON, D. D. S., Operative Dentistry.
CHAS. MERMILLIOD, Jr., D. D. S., Prosthetic Dentistry.
P. A. MICHEL, D. D. S., Operative Technics.
H. P. MAGRUDER, D. D. S., Prosthetic Technics.
P. L. CUSACHS, A. B., M. D., Ph. G., Chemistry
L. PERRILLIAT, B. Sc., M. D., Anatomy.
EDWARD B. PREIS, M. D., Microscopical Anatomy and Bacteriology.

ASSISTANT DEMONSTRATORS.

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H. L. JENSEN, D. D. S., Operative Dentistry.
WALLACE WOOD, Jr., D. D. S., Prosthetic Dentistry.
R. H. WELSH, D. D. S., Prosthetic Dentistry.

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W. V. B. AMES, D. D. S.
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WALKER G. BROWNE, D. D. S.
B. D. BRABSON, D. D. S.
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T. M. COMEGYS, D. D. S.
RUSSELL H. COOL, D. D. S.
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J. G. FIFE, D. D. S.
JAMES F. GRIFFITH, D. D. S.
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THOS. P. HINMAN, D. D. S.
W. L. JONES, D. D. S.
J. F. JOHNSTON, D. D. S.
L. A. KING, D. D. S.
J. H. LANDRY, D. D. S.
LAWRENCE LEONARD, D. D. S.
M. J. MASSENGILL, D. D. S.
M. S. MERCHANT, D. D. S.
F. W. McCALL, D. D. S.
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J. W. PALMER, A. B., D. D. S.
W. J. REYNOLDS, D. D. S.
R. A. RUSH, D. D. S.
M. C. SMITH, M. D., D. D. S., D. M. D.
H. T. STEWART, D. D. S.
W. E. TAYLOR, D. D. S.
E. TELLE.
T. C. VAN KIRK, D. D. S.
T. C. WEST, D. D. S.
F. C. WILSON, D. D. S.

CALENDAR.

Entrance examinations conducted by the Superintendent of Public Instructions office, for students arriving without the required preliminary education certificate, begin	NOVEMBER 2.
Examinations for Advancement (one day only)	NOVEMBER 3.
Opening of regular Winter Session, at 8:30 A. M.	NOVEMBER 6.
Matriculation for full session, closes	NOVEMBER 15.
Final Examinations begin:	
Senior Class	MAY 21.
Junior and Freshman Classes	MAY 27.
Commencement Exercises	JUNE 4.
Summer practical, operative and prosthetic dentistry, courses open	JUNE 5.
close	OCTOBER 31.

The College adheres to all rules of the National Association of Dental Faculties and National Association of Dental Examiners.

For further information and catalogue, address,

C. V. VIGNES, D.D.S., Sec'y,

637 Canal St., NEW ORLEANS, LA.

CLINIC ROOM—NORTHWESTERN UNIVERSITY DENTAL SCHOOL

The Baltimore College of Dental Surgery.

CHARTERED BY THE LEGISLATURE OF MARYLAND IN 1839.

The Oldest Dental College in the World.

FACULTY

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WM. B. FINNEY, D. D. S., Professor of Dental Mechanism and Metallurgy.
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CHARLES F. BEVAN, M. D., Clinical Professor of Oral Surgery.
J. W. CHAMBERS, M. D., Professor of Anatomy.
WM. F. LOCKWOOD, M. D., Professor of Materia Medica.

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WM. F. SMITH, A. B., M. D., Regional Anatomy.
R. BAYLY WINDER, Phar. G., D. D. S., Materia Medica.
EDW. HOFFMEISTER, Ph. D., D. D. S., Materia Medica.
J. N. FARRAR, M. D., D. D. S., Irregularities.
DR. GEORGE EVANS, Crown and Bridge-work.
KASSON C. GIBSON, New York, N. Y., Oral Deformities and Fractured Maxillaries.
JOHN WALTERHOUSE LORD, A. B., L. L. B., Counsel and Lecturer on Dental Jurisprudence.

CLINICAL INSTRUCTORS

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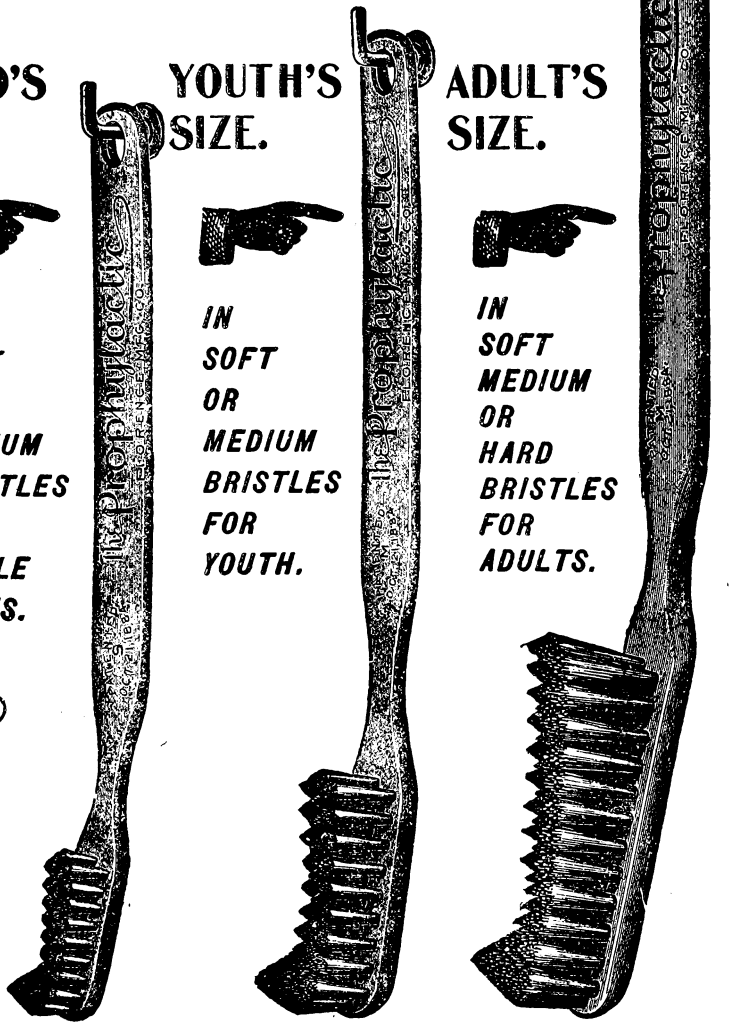

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